

thing) where he saies plainely: *Luk. 14. 12. When thou makest a dinner or a supper, call not thy rich neighbours, and freinds: least they bid thee againe, and a recompense be made thee, but call the poore, &c. and thou shalt be recompensed at the resurrection of the just.*

Though this place be not so to be taken, as though the rich might not be invited, yet it is much more strong for the poore; But how far are many Rich Professors from walking by *this rule*, or the Example of Job (Chap. 31. 17. who tels us he eat not his *Morsels alone; but the poore had part with him*: and this was a ground of comfort to him in his greatest troubles? What will such persons answer our blessed Lord at the last day, when he tels them, ye were ashamed of me in my *poore Members*, ye owned them not, yee invited and entertained one another freely, and frequently, but my poore brethren were not amongst you; although ye knew your Masters will in *this thing*, yet ye did it not, but walked contrary to it?

2 Use.

This is for the honour & comfort of those who communicate of their good things as well (or much rather) to the *poore*, and *meanest Members of Jesus Christ*, as to the Rich, And according to the Example of Christ, owne them for brethren: To these he will say, *come ye blessed Children of my father, inherit the kingdome; for in as much as ye shewed kindnesse to these my brethren, ye did it unto me, Mat. 24. 34.*

Thus have I (through the assistance of God) performed my promise, to make up what was formerly published, an 100 *Observations in Nature, with Similitudes*; together with their improvement to spirituall uses.

I have many more in my *Nursery*; but most are yet in the *seede*, or *Bud*, which when they are growen up, and enlarged (as these) into a *Body*, and *Branches*, I shall (if the Lord please) communicate them also: that others (if they will but receive them, & be content to have them planted in their owne *Gardens*) may partake of their *Fruits*; such *Fruits* as the *Apostle* speakes of *Gal. 5.* and *Col. 1. 6.* And it is my desire, and supplication to the great *husbandman* that he will engraft every *truth* into our hearts, and cause it to grow, and thrive (by the *Sunshine*, and *Raine of heaven*) and to bring forth much good fruit, unto himselfe: *pleasant, & savory fruits*, such as he loveth, and will eat of, that his soule may blesse us: yea, & whereof we our selves may also feede, not only here but to all *Eternity*.

F I N I S.

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F I N I S.

Observations upon some part of
S^r FRANCIS BACON'S
NATVRALL HISTORY

as it concernes,

Fruit-trees, Fruits, and Flowers:

especially the

Fifth, Sixth, and Seaventh CENTURIES,

Improving the Experiments mentioned,
to the best Advantage.

By R A: AUSTEN Practiser in the Art of Planting.

Gen: 2. 8.

And the Lord God planted a Garden Eastward in Eden, and there he put the man whom he had formed.

And out of the ground made the Lord God to grow every tree that is pleasant to the sight, and good for foode.

Gen: 1. 29.

And God said: behold I have given you every hearb bearing seede, which is upon the face of all the Earth: and every Tree, in which is the fruit of a tree bearing seede, to you it shall be for meate.

O X F O R D,

Printed by Hen: Hall, for Thomas Robinson. 1658.

24-21

*To the honourable Robert Boyle Esq. sonne
to the Lord Boyle Earle of Corke:*

Honoured S I R,



THE Prophet David tells us, the workes of the Lord are wonderfull, sought out of all them that have pleasure therein: and he hath laid some of the secrets of Nature so deepe, that no humane understanding can fathom, or find them out: Yet neverthelesse he gives wisdom unto man (who is studious thereabout) to discover multitudes of rare, and excellent things, for the use and comfort of mankind, that God in all things may be glorified.

Every man hath a Talent, (or more) given him, to improve, for the honour of him that gave it, and the advantage of himselfe, and others: and not to hide it, or lay it up in a Napkin, as very many slothfull persons do, to their shame, and destruction: Especially of those who have the greatest portions, and Revenues in this world: and therefore think ther's no need (nor reason) they should labour, either with body or mind: * But M^r Boulton (now in heaven) hath left a Lesson behind him for such to learne, He is (saith he) a cursed drone, a child of idlenesse, and sloth, the very tennis Ball of Temptation, most unworthy of the blessings, and benefits of humane society, who doth not one way or other, cooperate, and contribute to the common good, with his best endeavours, in some honest particular calling, or course of life. It brings true honour to be Instrumentall for the honour of God, and good of others: we may take his word for it, who hath said, Them that honour me I will honour, but those that despise me, shall be lightly esteemed. All men desire a good name, which is no way attainable, but by obedience according to the Scriptures: the truest worth, and Nobility, is to be borne from above, to have Relations in Heaven, all earthly honour is but a shadow to it.

Now I wish (for their good) such persons would look upon you, (worthy Sr) and set you as an Example, and Patterne before them, of Learning, and studiousnesse, in all profitable knowledg, your diligent search,

DEDICATORY.

and indagation into the noble Art of Chymistry, (as it relates to Vegetables, and Animals) having already produced many excellent effects, and been profitable unto many; your study also of other parts of Philosophy I doubt not but will (in due time) bring forth speciall fruits; And that in particular about Fermentation, (and other waies of preparation) of Liquors, more especially that of Cider, which you are now in hand with. It is well knowne, how acceptable, and profitable it is, and hath been, for many generations past, for the health of our bodies, above many (if not any) other kinds of Liquors, knowne to us; Now in case it may be advanced, and made much better, by Fermentation, (as there is no doubt but it may) then it will be of more speciall and generall use, then ever yet it hath been, if unto all this be added, viz. to make it of those fruits which are knowne by Experience to be the best for that purpose: The Learned, and incomparable Author Sr Francis Bacon hath left unto men such Rules, and helps in all kinds of Learning, that they will be much wanting to themselves, if Arts, and Sciences improve not, very much above what they have been in former ages; And as the foresaid worthy Author was eminently seen in all Arts and Sciences, so his delight was especially (as is recorded of him) in Vegetable Philosophy, which was as it were, his darling delight, having left unto us much upon Record in his Naturall History; some part whereof referring to Fruit-trees, Fruits, and Flowers, I have, (by encouragement from himselfe) endeavoured to improve unto publique profit, according to what understanding, and experience I have therein: (I think it would not be in vaine, if others who are seene, and experienced in other parts of the said History, would do the like) And seeing I perceive (since you have been pleased to honour me with your acquaintance) that your Genius is towards things of this nature, to promote them, in order to the Common-good, and that I have encouragements in my labours thereabout, (both as to the Theory, and Practise) I humbly, present these following Observations into your hands, and am (for all your favours)

(honoured Sr)

your obliged servant

R A: AUSTEN.



To the Reader.



Concerning my undertaking this ensuing work, I give this Account: It may (perhaps) by some be thought too bold an attempt in me, to examine the writings, and to recede (in any thing) from the Judgment of so *Eminent*, and *worthy an Author*; To which I Answer: For what I have here done, I doubt not, but if the *Author* himselfe were now living, he would approve of it: But more particularly, let it be considered, that *those things* which I have to do with herein, are directly within the compasse of my *Calling*, and *course of life*: about which I am daily conversant: And the *Author* hath given to my selfe, and others, sufficient encouragement in this: Having said (in his *Advancement of Learning*) *That the writings of speculative men upon active matter, seemes to men of Experience, to be but as dreames, and dotage: And that it were to be wished, (as that which would make Learning indeede solid, and fruisfull) that active men would, or could become Writers: Men that have Experience in things, are like to see in the Mysteries, and secrets of them, more, and further then such as have only Notions, and apprehensions of them without action, and practice, It is concluded, and laid for a ground: That, peritis credendum in sua Arte: Men are to give credit to Artists in their owne faculty, And further observe: That many of the ensuing particulars, are but only Queries, set downe by the Author, wherein not having Experience, he desired further light from it: which I have endeavoured herein to resolve; And wherein I have perceived a manifest mistake, I have (for the Truths sake, and profit of men) discovered it. I hope, without any reflection upon the wor-*

To the Reader.

* In his Epistle
to his Naturall
History.

thy, and *Learned Author*, who I verily believe, would have encouraged any *Experienced man*, in the like undertaking: not seeking himselfe, (as he * professeth) but the *Truth*, in these things, for the good of future *Generations*.

Let it be observed also, That the *Experiments* set downe by the Author in his *Naturall History*, are of two sorts, as himselfe saith: *Experimenta Fructifera*, & *Experimenta Lucifera*: *Experiments of Light*, and *Discovery*, (such as serve for the illumination of the understanding, for the finding out, and discovering of Naturall things in their *Causes*, and *Effects*, that so *Axioms* may be framed more soundly, and solidly) And also *Experiments of use*, and *Profit*, in the lives of men.

Now the *Observations* upon these *Experiments* tend also to the same ends. I have endeavoured to improve them for most advantage, and therefore have so much enlarged, especially upon many of them, and where I have been more brieve, and the thing required further *Discovery*, I have referred to it, in my *Treatise of Fruit-trees*, where it is spoken to more fully.

And that there may be a brieve view of what is contained in the ensuing *Experiments*, and *Observations*, I have set downe the chiefe particulars, in the Table following, which I recommend to thy

use, for thy profit,

R A: MUSTEN.

Good



Good Reader.



THE Author of this piece has alwaies thought fit (I dis-
claime any worth in me that may deserve it) to give me
leave some time before every impressiō to make a judg-
ment of what in this nature he has published.

BUT now bearing Reverence to the Greatnesse and
Honour of the Person (without controversy for that
constellation of Learning and Nobility in him none of the least credits of
our Nation) with whom he is now seene, was desirous, that I should not
only tell him (which at other times served the turne) but thee, and the
World, my thoughts concerning this his adventure. Which are, that
no man ought to judge him presumptuous in this particular, I take him
to be such who has more mind to communicate to the World (for pub-
lique profit) what he has found by triall certaine, than to make a book;
and indeed am Witnesse my selfe to the truth of most of his Experiments,
the Subjects of which no man dares call too low for the pen, that Remem-
bers the Author whose Writing first gave occasion to these Animadver-
sions.

The Nature of things, Causes of their generation, and of all appear-
ing effects in them, is confest to be a dark theme, and for ought I know,
many questions thereabouts are not likely to be concluded, especially to the
conviction of gaine-sayers, till Anaxagoras, Epicurus, Aristotle rise a-
gaine: A little time by Gods providence I have been continued in the
World, some small pittance of which has been laid out in that search: I
dare not say that I have been ascertained of the adequate, and true
causes, with their manner in Causation of any of those Vulgar appea-
rances which are in all mens Eyes, after the best state that I can make
in this subject, Fortasse none, if opposed, may put me to a blanke; nor am
E

To the Reader.

I confide of any mans *Wisdom* that concludes affirmatively more than this. That such an effect may proceede in such a manner from such a Cause: Sometimes in many opinions we have no probable causes assigned, but when many probable, than tis hardest of all to prove which is true: This I speak to take off the exceptions of such who are otherwise perswaded than our Author declares himselfe, when the question is concerning causes, as in the 481. Experiment: My Lord Bacon seemes to maintaine Anaxagoras his opinion, concerning the way of generation, and augmentation per *ἐκπομπήν*, Mr Austen Aristotles, Ile not be bound that in a severe judgment the Master of our Schooles shall have the sentence on his side: Yet we find few better Instances (then Mr Austen brings) to explaine how out of one Nature (if indeed there be but one) in the iuyce drawne through the Roots to serve severall grafts upon the same stock severall natures may be made. Others may likely be offended at his refusall to attribute many effects to the descention of Sap, which who ever does, I give him leave to blame me too; For I have long believed the opinion of descention of Sap in Trees, a vulgar Error, and have alwaies encouraged him to publish his arguments to the contrary. There may be others ready to stumble at other things, but if it be in Matters wherein we are so much in the darke, by my consent for all mistakes we will interchangeably beg, and give pardon: his arguments to me are all especially commendable in this, that they smell more of the garden, than Library see pag. 100, 101, &c. of his Treatise of Fruit-trees. If therefore my judgment must be made, I can't but commend him heartily, and his example to all, exercised in any like waies, and doubt not but that it would be mightily to the advantage of knowledge in Naturall Philosophy, if even all to the Lowest of Mechaniques would communicate the mysteries of their Arts. Interest indeed hinders most, and so tis like to do; from making any thing Valuable common. But tis Heroicall and Noble Charity when theres nothing but selfe-Interest hindring, to deny that for the publique good: I believe the Author expects to himselfe no attributes of so high Qualities. I wish he may alwaies have his due at least from

(Good Reader)

His and Thine to serve thee

R. SHARROCK

L. B. novi Coll: Soc:



Observations upon some part of
S^r FRAN: BACONS
Naturall HISTORY
 the V. CENTURY.



WE E will now enquire of Plants, or Vegetables,
 And we shall do it with diligence. They are
 the principall part of the third daies Work: They
 are the first Producat, which is the word of A-
 nimation; for the other words are but the Words
 of Essence: And they are of excellent, and ge-
 nerall use, for Foode, Medicine, and a num-
 ber of Mechanicall Arts.

*Experiments in Consort touching the Accclera-
 tion of Germination.*

THere were sowed in a Bed, Turnip-seede, Wheate, Cowcumber- Experiment.
 seede, and Pease: The Bed we call a Hot-bed: Horse-dung (such 401.
 as will Heate when laid together) laid a foot high, supported on the
 sides, and mould laid thereon two or three fingers deepe. The Turnips
 seede and Wheate, came up halfe an inch above ground, within two
 daies

daies after; the rest the third day: This is a noble Experiment, for without this they would have been foure times as long in coming up. It may be tryed also with Cherries, Strawberries, and other Fruits, which are dearest when they come early.

Observation. Though a *Hot-bed* conduce much to the speedy springing up of Seeds, Stones, Roots &c. yet the end cannot be attained hereby: (they will not come to ripenisse earlier then others for profit) unlesse there be a continuance, and concurrence of Causes, from first to last, all along, without intermission: For the hasty, and sudden springing up of seed upon a *Hot-bed*, is but a forcing of Nature, for a little while, and serves to excite for the present, while the heate continues in it; but what shall carry on the springing, and growth of these things to perfection, when the heate of the *Hot-bed* is over: surely as the Cause of springing and growth becomes weaker, and weaker, untill it cease altogether, so also will the effect of that heate, that is, the growth of the Plants.

Experiment. Steeping of Wheate in fat waters, and other Liquors, is a rich Experiment for profit, if the goodnesse of the Crop answer the earliness of the coming up &c.

402.

Observation. Steeping of Seeds, Kernells, Stones &c. is chiefly to excite the spirit of the kernell, or Seede, and to make them the sooner, and more easily to open, and spring up out of the Earth; which some kinds have much need of: As *Aprecots*, *Almonds*, and other thick, hard stones.

As for *Wheate*, and such like seeds, steeping will excite the spirits, and open the grosser parts, and hasten their springing up; But I conceive the vigour, and virtue (gotten by such steeping) will be soon gone, it will not be lasting, as the naturall properties of the seed; Whatsoever is naturall, in seeds, Plants &c. doth continue, and cannot fall off, or be lost; but that which is but accidentall, and from Art, is but of short continuance, and soone over; (like the virtue of a Cup of wine, or a meales meate, to our bodies) so that the end will not be attained, unlesse the same help be renewed, and often repeated, by watering of such steeped seeds, with the same Liquors, from time to time untill they come to perfection.

Strawberries

Strawberries Watered now, and then (as once in three daies) with Experiment.
Water wherein hath been steeped *Sheeps-dung*, or *Pigeons-dung*, will 403.
prevent, and come early.

This is a good Experiment, and profitable to make the *Berries* Observation.
earlier, and fairer, so it be seasonably, and moderately done; I conceive the morning is best, before the sunne be hot; but water them not too often, nor too much, lest it make the ground too rank, and fat, which is not good for *strawberries*; it makes them commonly runne into great leaves and strings, and to beare Fruits lesse.

Dung, or *Chalke*, or *Blood*, applyed in substance, (seasonably) Experiment.
to the Roots of Trees, doth set them forwards &c. 404.

Too great a quantity of these things, will hurt, especially young Observation.
Trees; as the best meates, and drinks immoderately, and unseasonably taken, hurt men: *Blood*, or *Flesh*, or the like, applyed to the Roots of old *Vines*, or other Fruit-trees being decaying, or old, will refresh them greatly: Let this be done before winter, or in winter time, that the virtue thereof may soke into the Roots, and the earth about them, before the spring: And also that it may not be noysome, or offensive, in spring, or sommer after: Digge up the earth, and bare the Roots, as much as may be, and power in the Blood, or lay the Dung, Flesh, or any fat substance to the Roots, afterwards cover it with the mould, all over: Otherwise take a Barre of Iron, and make many holes, among, and about the Roots of old Trees (especially where the ground is bad) and power in Blood of Beasts, fat water, or such like; this will much refresh the Trees.

Fruit-trees upon a South, or south-east Wall, will bring forth their Experiment.
Fruits early. 405.

It is true, that the South-wall is best, and the South-east next, Observation.
to plant choice trees upon, to come early; the reason why the West-wall is not so good as the East, for early budding, and ripening of fruits, I conceive is mainly, because there is usually more raine, and moisture, and greater and more winds out of the West, in spring and sommer, then out of the East, which do much coole

the trees and fruits, and so retard. Also *May-Cherry-trees*, or other kinds which naturally bud, and bring fruits early, being planted (as is here said) against the back of a *Chimney* where fire is much kept, the same will bud, and beare very early in the yeare, especially if the wall be of *Brick*, and but a thin wall.

Experiment. Digging, and loosening the earth about the Roots of trees accelerate germination.
406.

Observation. This culture is undoubtedly a benefit to Trees, as to their increase, and growth: they will thrive the faster hereby; but I conceive not as to their early budding; for all trees bud forth before they draw one jot of Sap out of the earth: there is sap, existing in the buds and branches all the winter, which is excited by the sunnes drawing neere in the spring time, and breaketh forth into blossome, and leafe.

Experiment. A *Damaske Rose tree* in water budded in the space of ten daies in a Chamber.
407.

Observation. I conceive this acceleration was not for that it was set in water, but because the aire was somewhat warmer in the house, then out of doores at that season, it being in *October*; it would have done as much if it had beene set in earth: And as for the difference betwixt this, and that with the horse-dung mixed; it may be that *Rose tree* in water only had the better, and more Roots, which would certainly cause budding sooner.

Experiment. A *dutch Flower* that had a bulbous Roote, was put under water; and within seaven daies sprouted &c.
408.

Observation. I have tryed severall Flowers with bulbous Roots, and other kinds of Roots, in water, in the house, in *Autumne*, which kept fresh, and seemed to come on somewhat for a while, but afterwards Flag'd, and faded; I know no advantage that may be had hereby at that season, for the aire (in a while) growes chill, and coole, even within doores.

Experiment. *Radish &c.* in a *Memb*,
409.

upon Experiments:

5

Pease, Radish &c. are hastned in the Spring, and Summer, and *Observation:* their returnes quick, chiefly because they are sowed, and set in a warme place, upon ground sloping upon the *South-east sunne*; with some speciall shelters from the *North*, and cold Winds.

For *Nourishment*, water is almost all in all, therefore it is a com- *Experiment:* fortable Experiment for good drinkers. 411.

Simply Water affords but a feeble, and weake nourishment, *Observation.* crude, and cold: and therefore we see that in low, watrish grounds, fruit-trees come on poorely, being full of *Mosse*, by reason of the cold nourishment: and that in dryer, deepe, fat soyles, Fruit-trees are three or foure times bigger, and longer lived then those in watrish grounds: Neither is this a comfortable Experiment for good drinkers; for Experience shewes us, such as live most upon good liquors (eating but little) are more unsound, unhealthy people, and shorter liv'd, then those who drinke lesse, and feed upon solid meates.

Housing of Plants will accelerate germination:

Experiment:

412.

Certainely it will; if the Plants be ordered with discretion, to be seasonably set out in the sunne, and raine, in the warmest seasons, and time of the day, (removing the Box of earth in, and out, as occasion is) or otherwise *Housing* may spoyle them, and cause the branches, and Twiggs to contract, and become dry; for as the Aire within does is warmer then that without, so also it is dryer, and does exhaust and dry the Plants more, therefore they have need sometimes of the moist Aire without. *Observation.*

Experiments touching the putting back, or Retardation of germination.

TO make *Roses* come late. First, cut them after bearing.

Experiment:

413.

This may be a meanes as to some *Rose-trees*, that is, such as are *Observation:* old: I have knowne some of long standing, perhaps a dozen, six-

teene, or twenty yeares of age, and some of seaven, or eights yeares, (cut newly after bearing) have borne Roses againe, a second time, late in the yeare, being cut the next *full moone*, after they have done bearing; but there is a kind I have (amongst many other kinds) which naturally beares a second time, although the tree be but small and young; besides the *Rose* called the *Monthly Rose*.

Experiment. Secondly, *Pulling off the buds of the Roses that first spring forth.*
414.

Observation. I have try'd this second way, which succeeded not, it may be, because the trees were young; but one affirmed he pluckt off some Buds in the *spring*, and the tree bore Roses in November.

Experiment. Thirdly, *Cutting top Boughes in the spring.*
415.

Observation. This hath been tryed also, but was ineffectuall; but the tryall was upon young trees; as for the Report that followes in this *Experiment of Cyons perishing*, if the old top boughes be cut off, it is otherwise, for it is a common Experiment to cut off all the boughs of a tree, and to graft them, and the Grafts will not only not perish, but grow the better therefore; as having all the sap to themselves, which naturally riseth (the sunne also drawing it up) without the help of any top bough left, as continuall Experience shewes.

Experiment. Fourthly, *Laying the Roots bare about the end of December.*
416.

Observation. Many hundreds of trees are thus bared, yet I find no difference at all in the late budding, or bearing of such trees, from others.

Experiment. Fifthly, *Removing the tree some Months before it buddeth.*
417.

Observation. This hath been done, but the Trees being removed so unseasonably (too late) they grew poorely, so the end was not attained.

Experiment. Sixthly, *Grafting Roses in May.*
418.

Observation. I know an ingenious Gentleman that tryed this Experiment
Inoculating

Inoculating Buds in the spring, which budded for Roses at the same time that others (of the same kind) did; which buds being cut off they bore Roses afterwards, the same yeare, when others were gone.

Seaventhly, *Girding the body of the tree with some Packbread.* Experiment. 419.

This will not do it neither, we see commonly that grafts tyed straight with strong flaggs, and some branches of wall-trees nailed straight to the wall, so that I have seene the bark dinted in with the straitnesse of the Lether, yet for all that sap riseth plentifully, through the place so girded, up into the branch. Observation.

Eighthly, *Planting them in the shade.* Experiment. 420.

I have knowne *Rose-trees in a shady place*, which have not bore at all, its a tree that loves the sunne. So that I suppose this Experiment will not hold: I have try'd it in one or too, and it succeeds not. Observation.

*Experiments touching the Melioration of Fruits,
Trees, and Plants.*

AN heape of Flint, or stone laid about the bottome of a Tree upon the first Planting, makes it prosper much. Experiment. 421.

Stones laid to the Roots of Fruit-trees, when newly set, is a good Experiment in some grounds, but not in all; its true, stones so laid, keep the Roote of the Tree somewhat more moist, and warme, and stedy, that winds shake it not, and so are profitable, but there is danger (in some grounds) lest they harbor *Ants*, or *Pismires*, about the Tree Root, under the stones, which I have seen, to the hurt, and destruction of divers young trees. But it is a safer, and better way to lay a good quantity of rotten dung, or litter, straw &c. round about the Roots of new set Trees, upon the top of the mould, this keeps them warme in winter, and coole and moist in sommer, and Stedy, and the moisture, and fainesse of the muck
soles

okes downe to the Roots, and refreshes the tree very much: or for want thereof, lay a *heap of weeds* round about the new set tree Roots, and so all the next sommer after; these things are speciall advantages to new set trees.

Experiment. 423. *A Tree at first setting should not be shaken, but after a yeares rooting then shaking is good.*

Observation. When young Trees are first planted, its very convenient to set a stake to each of them, and tye them together with a hay band, or some soft band, that winds shake them not: and this not for a yeare only, but divers yeares, untill the young trees be well rooted in the earth, and also be growne strong, that the winds bow not their bodies, and cause them to grow crooked, which fault I have seene in very many trees.

Experiment. 424. *Cutting away suckers, and side boughes, make trees grow high.*

Observation. All suckers must be cut away from the Roots of Trees; And as for side branches, those may be cut as men are minded to have their Trees to spread neerer, or higher from the ground: but cut not the side branches too soone, before the body be growne strong enough to beare the head, else it will be top heavy, and grow crooked.

Experiment. 426. *To have many new Roots of Fruit-trees, lay the Branches in the ground &c.*

Observation. The branches of all kinds of trees will not take Roote thus; This way of Propagation is only for some kinds, As *Mulberries, Figs, Vines, Quodlings, Nurs-gardens*, and some other kinds of Trees, whose branches are soft, and porous. As for *Aprecoits, Peaches*, and such like, they will not take Roote thus: I have try'd, but not one Roote could be got, neither will they take with grafting, I have try'd many. The way to propagate these kinds, is by *Inoculating* buds upon young stocks, full of sap.

Experiment. 427. *From May to July you may take off the barks of any bough &c. and set it, and it will grow to be a faire tree in one yeare, the cause may*

may be for that the baring from the bark keeps the sap from descending towards winter.

It is true, that the Boughes of some kinds of trees will take Roote *Observation* in this manner as is here exprest; that is, such kinds as will take roote with laying downe in the ground, mentioned in the last Experiment; which being cut off and let, may grow to be a faire tree in certaine yeares, not in one yeare (as is said) for the Roote (got in this manner) are but small, and very disproportionable to the bough, so that it can come on but very poorely, and slowly, for divers yeares: As for the baring from the bark, which is supposed to keepe sap from descending towards Winter; I say, the sap is as farre from descending when the bark is on, as when tis off; theres no such thing in nature as descention of sap in any trees whatsoever.

This worthy Authour took this upon trust, according to the generall opinion of men, for had he but stayed a little to consider it, he would have found it groundlesse, and a meere conceit; For all the sap that ascends into the body and branches of a tree, is changed into wood, bark, buds, blossomes, leaves, and fruits, it is turned into that body and substance which we see above ground, and none at all descends at any time; for there is no Cause, and therefore no such effect: sap is continually ascending all the yeare long, more, or lesse, either for the growth of the tree, or for the conservation of it in life, and in all its dimensions: for there is a continuall extraction of sap out of the body, boughes, and branches, by the sunne, and aire, as this Authour elsewhere asserts, and which Experience proves. Now if there were at any time, a descention also, what then would become of the tree, it would quickly wither, be contracted, and shrink apparently: whosoever is unsatisfied with what is here said against descention of sap in trees, may see (hereof) more largely many Arguments against it in my *Treatise of Fruit-trees*, pag. 100. 101. 102. &c.

If Trees beare not, bore a hole through the heart of the tree, and it *Experiment* will beare. 428.

Perhaps this course may do some good in letting out superfluous *Observation* sap, if too much repletion be the cause: But there are divers other

TO

Observations

other Causes of barrenness of Fruit-trees: As too deepe setting, the Roots running downe into gravell, Clay, water &c. which must have answerable remedies. And sometimes it is in the nature of the trees: that all the culture in the world used to the Roots, and body will not help, without engrafting the branches with Grafts of some good bearing kinds, which is the best way I know to have store of good fruits, (and speedily too) from barren trees.

Experiment. To make Trees beare, cleave the chiefe Roots, and put in a small
429. pebble.

Observation. This may be profitable not only for that the Roots may be bark-bound, as well as the body, and branches (which must be scored downe, and cut to the wood) but also it will cause the Roots to shoote forth many young small Roots at the place opened, which will afford more vigour, life, and sap to the branches, and so make the tree stronger, and more in heart, and able to bring forth more, and fairer fruits.

Experiment. Trees against a south-wall have more of the heat of the sunne, then
430. when they grow round.

Observation. Apricots, Peaches, and such like cold fruits will scarce ripen but against a south-wall: they have need both of the direct, and reflex beames of the sunne: And if it were more practised to set some other choice kinds of fruits upon a south-wall (as the great Burgamit, sommer Bonciten, Green-field Pears, and other speciall kinds) this would advantage them greatly, not only in bignesse, but also in their early ripening, and goodnesse of tast; thus, one, or a few, would be worth many ordinary ones.

Experiment. Some pull off the leaves from wall-trees, that the sunne may come
431. the better upon the boughs and fruit.

Observation. This may hasten ripening, but I conceive it hinders the bignesse of the fruits, the sunne ripening them before they have attained their naturall greatnesse: in case it prove then very hot weather: so that if leaves be pulled off, it should not be till fruits are at biggest.

The

The lownesse of the bough, maketh the fruit greater; and to ripen better, &c. Graft a tree low, and maintaine only the lower boughs. Experiment. 432.

Low trees, and the lower boughs of high trees, have their fruit ripe somewhat sooner then the higher, because they have some benefit by the reflection of the sunne from the Earth, as well as from the wall; (if they grow against a wall,) but that the fruits are greater on lower, then on higher boughs, I perceive not; I am sure I have seene sometimes faire fruit on the higher boughes, and but small on the lower, in case the branches of a wall-tree have beene permitted to grow straight upwards, without bowing downe along the wall, as most commonly they be, and the reason is plaine because the most, and greatest quantity of sap presseth upwards, and leaveth the side branches indigent of sap, whereby they grow poorly, and some even dye for want of sap: now according to the quantity of sap in branches, so are the fruits, smaller, or greater. It is true indeed, many little, and low trees, if they be vigorous, and shooe well, beare very large fruits, it may be larger then high trees of the same kinds: but this is not because low, but because they are more lively, and vigorous then the other. And if we should graft a Tree low, and maintaine only the lower branches, by continually cutting off the higher, this would much enfeeble the tree, by degrees by obstructing of the sap, and the fruit would be accordingly. But the best way to order a wall-tree that shoots upwards strongly, is to bow those strong branches along the wall both waies, and then there will be as large fruits on the lower, as on the higher boughes, and sooner ripe. Observation.

To have fruit in greater plenty the way is, to graft not only upon young sticks, but upon divers boughs of an old tree &c. Experiment. 433.

It is an excellent Experiment to graft the boughes of an old tree, (that is a bad bearer, or beares bad fruits) with grafts of some speciall good bearing kinds, for this will have large branches and beare fruits, even in a yeare or two: so that it is a very unwise course of many who (when some of their trees beare not as they would have them) cut them downe, and set young ones in their Roome, which cannot possibly attaine the bignesse of the former, in many yeares. Observation.

Experiment. *Digging yearly about the Roots of Trees is a great means both to the acceleration, and melioration of fruits &c.*
434.

Observation. *Old trees that grow in stiffe, cold, clay grounds have most neede to be dug about yearly, that thereby the ground may be more open, and mellow; but for young trees of few yeares standing, (especially if in sandy, mellow grounds) these have little, or no neede at all of digging about: To dig about Roses, and such like, which grow neere the top of the ground, I conceive it is needlesse, for this work is chiefly to open the earth about old fruit-trees (whose Roots are growne great, and deepe,) that the Raine, Snow, and Sunne in winter, may reach the bottome Roots.*

Experiment. *A Fruit-tree almost blowne up by the Roots, and set up againe, the next yeare bore exceedingly: loosning the earth, comforteth any Tree.*
435.

Observation. *I was (not long since) at the raising up of a couple of faire App'l-trees blowne downe, the one Rooted, and bore well afterwards: the other died. Though digging about the Roots sometimes be good, yet overmuch digging, and loosening the earth about the Roots of trees, will cause many to be blowne downe by great winds, which will not fasten againe to abide a strong wind, in many yeares, if ever.*

Experiment. *To revive an old tree, the digging of it about the Roots, and applying new mould to the Roots, is the way, and change of mould to the better, is profitable.*
436.

Observation. *Digging (as hath beene said) with caution, is good, and change of mould, if to the better, is also very advantagious to fruit-trees, in case the soyle be barren, but if it be very fat, as some is, (especially some particular places by accident) then mould that is more sterill, and hungry, will do better; for overmuch repletion, and fertility may hinder fruitfulness; and caule the sap to runne most into long shoots, and broad leaves.*

Experiment. *The shifting of ground, is a meanes to better the Tree, and fruit: and all things do prosper best, when they are advanced to the better. And a Nursery ought to be in a more barren ground, then the places whither they are transplanted.*
439.

It is true: *change of soyles* sometimes is very good, if to the *Observation*. better: but its true also, that if trees grow in *over ranke soyle*, then *worse* will be better; that is, will help more towards *fruitfulness*: as a course, and meane fare is better for a fat man, then the more delicious. Without controversy, *young trees* out of *barren Nurseries* come on faster when *transplanted*, then out of *fat soyles*; but in case the Nursery be *fat soyle*, then some other as good, must be laid to their Roots when set againe.

Hacking of Trees doth great good to Trees.

Experiment:
440.

After eight or tenne yeares growth, *cutting, or scoring, or hacking* the barke of trees with a knife, is profitable; but while they are young, the Barke is but thin, and tender, and enlargeth well enough without this *cutting*, unlesse some that through barrenness of soyle (or other cause) are *barked* bound.

Shade to some plants conduceth to make them large, and prosperous, more then *Sunne*, As in *strawberries*, and *Baies &c.* Experiment:
441.

It is true, *Baies* and *Lawrell* prospereth better in the *Shade* then in the *Sunne*, being Hot Plants, but *Strawberries* do better, partly in the *shade*, and partly in the *sunne*; then in *shade* only: as among *Bushes*, and other plants: I have observed those in the *shade*, to beare little, or nothing: when others of the same kind, and growth, somewhat in the *sunne*, bore very much. *Observation.*

Pulling off many blossomes from a fruit-tree, doth make the fruit fairer: Experiment. and if some blossomes be not pulled off the first time a tree bloometh, it will blossom it selfe to death. 427.

Commonly the fewer blossoms upon a tree, the fairer will the fruit be, because (as the *Anthour* saies) of the plenty of sap: And indeed in case a tree newly planted, blossom very much, and the Roote be but weake (which may be perceived by the weakness of the buds) then its best to pull off most, if not all the blossomes: but many I have knowne (the first yeares planting,) take Roote so strongly, (being in good mould,) as that they blossom, and shoot forth, and beare faire fruits the same yeare. *Observation.*

Experiment. *It were good to try what would be the effect, if all the blossomes were pulled from a Fruit-tree, for two yeares together.*
450.

Observation. Fruit-trees that beare but every other yeare they (for the most part) beare that yeare very plentifully; and the excessive expence of sap that yeare (its like) makes the tree more feeble the next; but if blossomes be pulled off a yeare or two together: I suppose the sap would go more into the shoots, and make them larger then if it bore fruits; and the issue as to bearing more, or better fruits, would be nothing worth.

Experiment. *There is no doubt but that Grafting (for the most part) doth meliorate fruit; The cause is manifest, for that the nourishment is better prepared in the stocks, then in the crude earth.*
452.

Observation. Grafting doth not at all meliorate the fruit, simply in it selfe: for a tree will not be the better for Grafting, unlesse the grafts be taken from a good tree. If the tree from which grafts are cut, be no better then the tree which is grafted, then grafting will not a jot mend the fruit; which it would, if grafting were any thing towards the bettering of the fruit. The cause why Grafted trees beare better fruits, then wild ungrafted trees, is not because they are grafted, but because the grafts are good, the tree from which the grafts are cut, is of a good kind, and nature, and every twig, graft, and bud, hath the nature of the whole tree in it, perfectly; the properties of the tree are in all, and every part, as the soule in the body, which is *tota in toto, & tota in qualibet parte*; and the grafts retaine the nature, and properties being grafted upon wild stocks, and bring forth fruits accordingly: and that's the cause that grafting doth meliorate the fruit, and not because the nourishment is better prepared in the stock, then in the crude earth, for the branches of an ungrafted tree do no more receive nourishment from the crude earth, then the branches of a grafted tree: but the sap, and nourishment, passeth up a body, or stock to the branches, in the one, as well as in the other.

And as it is true that the *Peach* and *Melocotone* do beare good fruits comming up of stones, (which is not alwaies so neither, only here and there one) so it is true also that they beare as good fruits of the bud, being *Inoculated*.

It hath beene received, that a smaller Pear grafted upon a stock Experiment: that beareth a greater Pear, will become great &c.

453.

It is true (as the Authour thinks) that this will not succeed; *Observation.* because the *Grafts* do governe, they alwaies bring forth fruit answerable to their owne natures and kinds, else it were to little purpose to get Grafts from such, or such a good Tree, to have more of the kind. Yet it is true also that the *stock* hath some influence upon the *Graft*, so as to make the fruit better, or worse, according to the nature of the stock, in some small degree: As if we graft upon a *stock* that naturally beares a *sower, harsh fruit*, the fruit of the graft will not be altogether so pleasant as if it were grafted upon a *stock* that beares naturally a *sweet, and pleasant fruit*: and hence it is that *Pears* grafted upon *Quince-stocks*, will be more delicate, then upon *Pear-stocks*; The *Quince-stock* gives an excellent tast to it, but these trees upon *Quinces* will never attaine to any great bignesse, for all *Quince-trees* are but small in comparison of *Pear-trees*, and where the stock can be but small, the graft cannot be great, yet (as I have seene it) somewhat bigger then the stock: As for a *Pear* upon a *Thorne* (which this Authour speakes of) it cannot be good, it makes it a *harsh, hard Pear*, at the core, if it thrive and beare, but most commonly they dye in two, or three yeares: we know its naturall fruit, (*Hawes*) have stones in them: But for the *Apple* upon the *Crab*, thats naturall, the *Crab* being a *wild apple*, and very proper to graft all sorts of Apples upon, in regard of the soundnesse of the stock, its long lasting, and aptnesse to take with grafts, and also when set in the ground; although its true, it makes the fruit somewhat more tart, then the same fruit upon *sweet apple-stocks*.

As concerning grafting *Apples* on *Coleworts*, the kernells of which if set, will be a *Colewort*, if the thing be true, then it confirms what hath beene asserted, that the seeds of fruits when sown, bring forth a bastard fruit, which pertakes as well of the stock, as of the graft: Although it be true, that the seeds of some Apples, and *Pears*, may bring forth very good fruit, and the stones of some *Peaches*, may bring forth the same fruits, or neere as good: the cause, of this (I suppose) is, for that the stocks whereon these fruits were grafted or inoculated, were good kinds of themselves; and if so, no marvell though the seeds bring forth good fruits without

without *Grafting*, or *Inoculating*: and I verily believe that *Peaches*, (of which it is taken for granted (by some) that these come the same againe of stones) if they were *Inoculated* on *barsh*, *sower stocks*, and the stones of the fruit set, they would not bring forth the same, but it would manifestly tast of the *stock*, as well as of the *bud Inoculated*: as we see generally other kinds of *stones*, and *seeds* do; yea, and upon the Experience of some others, *Peach-stones* have brought forth a paltry, naughty fruit, many of them, though some good: As concerning the *grafting* of an *Apple Cions* upon a *Sallow*, *Poplar*, *Alder*, *Elme*, or *Horse plum*; it is in vaine to try, for tryall hath beene made upon stocks neerer in kind then these, and it would not come to perfection, it will grow a yeare, or two (it may be) and then decay, and dye.

Experiment. *Flowers Removed* wax greater, because the nourishment is more easily come by in the loose earth: It may be that often re-grafting of the same *Cions* may likewise make fruit greater.

Observation. To remove *Flowers* (small young *Roots*) into good fresh earth, will improve them in growth, and bignesse: especially if withall some of the *side-slips*, (and also of the *buds* which the *Roote* shoots up for flowers) be cut off: and some halfe a dozen, or halfe a score of the *buds*, or *shoots* be left to grow upon the *Root*; the *Roote* then will be able to give plentifull nourishment to them, whereby they will become much larger, then if all the *spindle buds* were suffered to grow.

But as for often re-grafting the same graft in order to make a large fruit; this will not do it, for we see it is constantly done from yeare to yeare; for what else is the cutting of grafts from young trees (it may be of two, or three, or but of one yeares growth) and grafting them againe upon their stocks: and repeating this for many yeares together; and yet we know the grafts hold their owne naturall properties from one yeare to another. And though there be (as has beene said) some small alteration according to the kind of the stock while it grows upon it, yet that alteration is lost, and falls off, when the graft is engrafted upon another stock, and the graft retaines its owne naturall properties only: with some small addition of the nature of the stock on which it (at present) grows.

It maketh figs better, if a fig-tree when it beginneth to put forth Experiment.
leaves, have his top cut off. 455.

If the fig-tree be very old, cutting off the top may be profitable; *Observation.*
for that such cutting (as in all other trees) maketh the sap shoot
forth into branches more vigorously, then otherwise it would; by
which lively rising of sap, the whole tree, and the fruit upon it,
fares the better: but if the tops of young-trees be cut off, (fig-trees
or other) there will shoot forth (in the room thereof) such
huge strong shoots, that the maine streame of sap will runne that
way, which great shoots will be for a yeare, or two (it may be)
unfruitfull.

It is reported, that Mulberries will be fairer, and the Trees more Experiment.
fruitfull, if you bore the Trunke of the tree thorow, in severall places,
and put in wedges of hot Trees, as Mastick, Juniper &c. 456.

As for the black Mulberry-tree, I suppose it needs not these *Observation.*
things to make it fruitfull, for I never knew any of them faile of
store of fruits every yeare; but white Mulberry-trees (with us)
have need enough of all helps that may be.

It is reported that trees will grow greater, and beare better fruit, Experiment.
if you put salt, or Lees of wine, or blood to the Roots. 457.

Concerning Lees of wine, washings of strong beere, or Ale Ves- *Observation.*
sells, blood, fish, or the like; it is certaine these are helpfull to
Fruit-trees, both as to their growth, and bearing; if seasonably,
and moderately used; especially to old Trees. I account it best
to be applied to the Roots of trees in the beginning of winter, that
the virtue may soke into the Roots, and earth about them be-
fore the spring.

Terebration of trees, as it makes them prosper better, so also it is Experiment.
found that it maketh fruit sweeter, and better, by causing the cour- 463.
est juice to sweat out, and the rest is better digested.

Terebration (or boring holes into the bodies, and great Roots) Observation.
of fruit-trees with a wimble, or Auger, is most needfull, as I judge,

for great trees which grow upon fat land, and have too ranke nourishment, and may be unfruitfull, and beare over watrish fruit for that cause; *that* may help to let out some of the raw, superfluous sap, and juice as an Issue in a mans body: but *scoring*, or cutting the barke of younger trees under Twenty yeares may be better for them, and this to be done chiefly in the spring time.

Experiment. 464. *As treccration doth meliorate fruit, so doth letting of Plants blood; as Pricking Vines or other Trees, after they be of some growth. It is reported that by this Artifice, bitter Almonds have beene turned into sweets.*

Observation. This must needs have the like effect (in some proportion as those particulars before mentioned, of *boring with wimbles*, (or the like) and *scoring the barke*, with a knife in the spring time.

Experiment. 465. *The Antients for the Dulcorating of fruit, do commend Swines dung, above all other dung; which may be for the moisture of that beast.*

Observation. I have seene divers faire Fruit-trees quite spoyld, and deaded; by overmuch *swines dung*, the swine lying amongst them, and continually leaving their excrements, by degrees the Trees withered, and died: but I doubt not but that a moderate quantity of *swines dung*, mixed with mould, and laid to the Roots of trees, will be good for them; and it may be in order to the *sweetning of the fruit*.

Experiment. 467. *As Grafting doth generally advance, and meliorate fruits; so (no doubt) even in grafting, the choice of the stock doth much: they commend much the grafting of Peares, or Apples upon a Quince.*

Observation. *Grafting*, (simply as grafting) doth not advance or meliorate fruits; as is shew'd elsewhere at large; But grafted trees beare better fruits, and sooner, then ungrafted trees, because grafts are usually taken from good bearing trees, and of the best kinds, and grafts (retaining the Nature of the trees from which they are cut,) do bring forth the same fruits; so also do Buds, (though they be much smaller then grafts) when *Inoculated upon wild stocks*.

See pag. 18.
Treatise of
Fruit-trees.
pag. 98.

As concerning the choice of stocks in grafting, in order to the advancement of fruits; it is certaine, the goodnesse of the stocks in respect of nature, and kind, is very considerable: The sweeter, and better the stock is, the better will the fruit be, that is engrafted thereon; Though it be true, that grafts governe, and bring forth the same fruits, according to their owne kinds, yet the stock hath some considerable influence upon the fruit of the graft, and thence it is, that Peares upon a Quince (as the Authour speaks of) are better, then the same kind upon a wild Pearre stock: (as Experience shewes) because a Quince is a more excellent fruit, then a Wild Pearre, so the nourishment of the stocks, is answerable.

It is set downe as try'd, that a mixture of Brans, and Swines dung, Experiment.
or Chaffe, and Swines dung, rotten, is a great nourisher, and com- 468.
forter to a Fruit-tree.

There is no doubt but Swines dung, or any other dung, with o- Observation.
ther Composts laid together till they be rotten, will nourish and comfort fruit-trees, and better when they are thoroughly rotten, & turned to mould, then before, because new dung may be too hot.

It is delivered by some, that if one take the bough of a low tree, new- Experiment.
ly budded, and draw it gently into an earthen Pot perforated at the 470.
bottom to let in the Plant, and then cover the Pot with earth, it will yeild a very large fruit within ground; the like will be effected by an empty pot, with some few persussions made in the Pot, hang'd in the Tree.

Concerning the first of these waies, I suppose the fruit grow- Observation.
ing upon the bough so bowed downe into a Pot, will not be so large, as the fruit upon the other boughes; because we see by Experience it is against the nature of sap to runne vigorously, (or in any great plenty) into boughes bended downewards so neere the earth, as this must needs be, for sap presseth upwards in greatest plenty; and consequently those fruits will be greatest which have most sap, I meane such as are of one kind, upon one tree.

And concerning the second waies by the perforated Pot, hang'd in the tree, that is more likely to worke the effect, as to the greatestnesse of fruit, not so much (I suppose) because of the persussions,

or holes in the Pot, as by the *shade* that the fruit has by the Pot: for although fruit that growes in the *sunne*, be much better, and more pleasant then that which growes in the *shade*, (as being better concocted,) yet that in the *shade* (of the same kind) is commonly the greater, but more flat, dull, and inconcoct: as we see in *Apricots, Cherries &c.* under the leaves.

Experiment. 471. All trees in high and sandy grounds, are to be set deep, and in watry grounds more shallow: And all trees when they be removed (especially Fruit-trees) care ought to be taken that the sides of the Trees be coasted (North, and South) as they stood before.

Observation. It is true, that trees on higher grounds are to be set somewhat deeper, then in moist grounds; yet beware of setting below the good soyle, in any ground. As for coasting of trees, that is, (setting the same side to the South when transplanted as was before) the Rule is good, but not necessary: for many thousands are transplanted with good successe not observing which side grew North or South: howsoever some reasons might be shew'd why tis best to observe it, if it may conveniently be done.

See hereof
Treatise of
Fruit-trees.
pag. 63, 64.

Experiment. 472. Fruit-trees, set upon a wall against the sunne, betweene elbows or Buttresses of stone, ripen more, then upon a plaine wall.

Observation. Fruit-trees so set, have their fruits ripe sooner then those upon a plaine wall not so much because they are defended better from winds, but chiefly because they have a double, or treble degree of heate to what those upon a plaine wall have, the heate being pent in by the Elbowes, or Buttresses of the wall, and so reflects the stronger, upon the fruits and trees, there is a double reflection of heate upon such.

Experiment. 475. Grafting Elms, (or other unfruitfull trees) will make their Leaves larger: as in Fruit-trees the Graft maketh the greater fruit.

Observation. Grafting, barely considered as Grafting, will not do this, it will neither make Leaves, nor Fruits fairer: but as stocks are chosen for the purpose: for though it be true (as hath been elsewhere said) that Grafts governe, and overrule the stocks, bringing

See pag. 18.

ing forth the same leaves, and fruits when grafted, as before; according to their owne Natures; yet it is true also, that the *stocks* have some *small influence* upon them, in making the fruits better or worse in *cast*, and *bignesse*: and so of the *leaves in fairenesse*, according to the *goodnesse* or *badnesse* of the *stocks*: yet notwithstanding *Grafts*, and *Buds* inoculated may be said to *rule*, and bring forth the same fruits, else it were in vaine to Graft.

Barrennesse of trees cometh of their overgrowing with Mosse, or their being Hide bound; or planting too deepe; or by issuing of the sap too much into the Leaves.

Experiment.
476.

Barrennesse of
Trees.

There are severall *Causes* of the *barrennesse* of trees. I conceive *Mossinesse*, as *Mossinesse*, is not the cause of *barrennesse*; but the *Causes* of *Mossinesse* are, the *Causes* of *barrennesse*, which are *Coldnesse*, *overmoistnesse*, and *barrennesse* of the *soyle*, where the trees grow: Therefore *such soyles* must be amended. See how, *Treatise of Fruit-trees*, pag. 114.

Also *barrennesse* is often, by reason of the *excessive sap*, and *moisture* of trees, which is manifest by their strong, and vigorous shoots, branches, and broad greene leaves; as in many young, full-fed trees, for while nature is vigorous, and active, spending it selfe that way, in the *excessive growth* of the Tree; it is then weake and feeble in bearing of fruits. Now as to *some kinds* of trees, it is not best (for some time) to go about to remove the *Cause*, that is, as to *standard Apple-trees*, *Pears-trees*, and other kinds, which grow in the *Orchards* and *fields* at large: but let them alone, let them go on in their *large*, and *vigorous growthes* for certaine yeares, though they beare but little, (provided that we know they are naturally of good bearing kinds, otherwise it is in vaine to waite for store of fruits from such trees:) After that such trees have growen exceedingly some yeares, and attained a faire large growth, they will then by degrees, grow lesse in the branches, and fall to bearing of fruits: But in case the trees are *Wall-trees*, and shooe excessively, and beare not, then it will be best to take away the *Cause* as much as we can; that is,

First, abate their overfull, and rank nourishment, by potting in sand, gravell, Buck-ashes, or any thing that is barren, instead of the fat soyle.

Secondly, also cut off, and part, one or two of the *biggest Roots*, from the body, that so it may have lesse nourishment, and that left will come to fruits.

Thirdly, Bend downewards the branches, and fasten them to the wall with their tops as low as may be, this obstructs, and restraines the excessive rising of sap, which rising moderately, comes to fruits: But if the Trees are *Naturally bad bearers* (if barren upon that account) then there is no remedy for such, but *grafting* them againe, with *Grafts* taken from some good bearing kinds, which are knowne by yearely experience to *bear fruits well*.

Experiments It hath beene set downe by one of the *Ancients* that two twigg of
477. 478, severall Fruit-trees flatted on the sides, and bound together, and set,
479. they will come up in one stock. And that Vines of red, and white
Compounding grapes flatted, and bound together, will beare Grapes of severall co-
of Fruits. lours, upon one branch; Also the shoots of divers seeds, will incorpo-
rate; And that young trees of severall kinds set contiguous, will in-
corporate.

These, and such like, are prescribed in order to the *compound-
ing of Fruits*.

Observation. Concerning *compoundi*ng, or *mixing* of divers kinds of fruits,
whereof to make one new kind, these things before mentioned,
(and many such like) have beene prescribed by *Ancient Authours*,
(a) Nat. Hist. which are of the number of those things (a) *Sr Francis Bacon*
pag. 165. accounts meere *imaginations*, and conceits without any ground,
or light from *Experience*.

(b) Advanc. He saies (b) (elsewhere) That many things have beene rashly,
Lear. l. i. p. 32. (and with little choice or judgment) received and registred, as ap-
peares in the writings of divers *Authours*, which are every where
fraught, and forged with *fabulous reports*, and those not only uncer-
taine, and untryed, but notoriously untrue, to the great derogation of
Naturall Philosophy with grave and sober men.

As for those things before mentioned, they can never effect
what is promised, to produce *compound fruits*. For we see by
continuall *Experience*, that *Grafts*, and *Buds* (though never so
small) set upon stocks of different kinds, do hold their owne,
and keepe their kinds; and so it would be if two long shoots were u-
nited,

nited, or three, or many: if it were possible to make them incorporate, and become one body, yet they would retain every one their owne nature, and bring forth each its owne kind of fruit, without commixture.

If any man desire to be set on work about these things, he may have prescriptions enough out of a certaine Book entituled, the *Country Farme*, pag. 360, 361, 362, 363, 364, 365, &c. For more full satisfaction about which, and all of that nature, see my *Treatise of Fruit-trees*, pag. 91, 92, 93, &c. where these things are spoken to largely.

But if the thing be possible in Nature, to mix and compound fruits, the likeliest way that I apprehend is this, (which I have upon tryall, but is not yet come to an issue) viz: To graft one fruit upon another, many times over, every yeare a different kind, (so that we keepe still to those kinds that will grow together) As first to graft a *Crab tree*, neere the ground, with some good kind of Apple graft, and the next yeare to graft that againe a handfull or two above where the first was grafted, and the next yeare to graft that *second graft*, and the *fourth* yeare to graft that *third graft*, a handfull or two, above where it was grafted, and thus every yeare to set graft upon graft for divers yeares together, this (probably) may make some alteration, and commixture in the top branch and its fruit, although it be true that every graft keeps his owne nature, yet so as that it receives some small alteration from the stock (as hath beene said:) Now the sap arising and passing through so many kinds of stocks (as before) up into the top branches, this (if any thing) I conceive will have an influence into the fruit of the last graft to cause some commixture (more or lesse) in the fruit; the sap passing through so many kinds of stocks.

Thus as of many kinds of Apples, together, so also of Peares among themselves, and of Cherries, and Plums, among themselves, but as for mixing contrary kinds, Apples, Peares, Cherries, Plums &c. all together, as some prescribe, there is no hope, nor possibility of any advantage thereby.

All Plants that draw much nourishment from the earth, and exhaust it, hurt all things that grow by them, as Ash-trees, Coleworts &c. And where Plants of severall natures (which draw severall juyces) are Plants.

Experiments
480, 481, &c
Sympathy, &
Antipathy of
are Plants.

are set together, there the neerer they doth good, As Rue by a Fig-tree, Garlike by a Rose-tree &c.

Observation. It is true indeed, That all *Trees*, and *Plants* that draw much nourishment from the earth, are no good neighbours to any thing that growes neere them, because such make the earth barren, in which plants must needs grow poorly: But that severall kinds of *Plants*, draw severall kinds of juyces, out of one, and the same soyle, I much question: as that bitter plants (*Rue*, *Wormwood*, and the like) draw the bitter juyce of the earth, and the sweeter kinds, as (*Roses*, *Flowers*, &c.) draw the sweeter juyce. For can it be imagined that there are so many kinds of juyces in the earth, as there are severall kinds of *Trees*, and *Plants*, so that every one should draw only its proper, and peculiar nourishment? May it not upon better grounds be said, that many *Trees* and *Plants* growing neere together in a piece of ground, though they draw all of them one and the same juyce, yet they convert, & assimilate the same, every one into its owne specifick nature. We see that in a little *Garden*, where there are (it may be) divers hundreds (or thousands) of distinct *Plants*, *Trees*, *Flowers*, *Herbs*, and *Simples*, they growing all upon one, and the same soyle, do convert the juyce, and fatnesse of it into their severall natures: by the same Law in Nature as severall kinds of *Grafts* upon one *Tree*, drawing one and the same Sap, do turne that one kind of nourishment, into their severall natures, whereby they bring forth (as we see by experience) distinct, and severall kinds of *Fruits*, made of the same single juyce, or sap of the *Tree* whereon they all grow: this they would do if there were all or many kinds of *Apples* grafted upon one great *Crab-tree*, and so of *Pear-tree*s, *Cherry-tree*s, and the like, upon their owne kinds: though multitudes of distinct kinds of grafts; draw one and the same sap, yet every one changes it into its owne nature; and why should it not be so also with severall plants drawing one and the same juyce out of the earth?

So that I cannot conceive that those things mentioned, (or the like) if try'd, would succeed to the purpose: viz. That *Rue*, set by a *Fig-tree*, will make the *Figs* tast sweeter; or *Garlike* set by *Rose-tree*s, will make *Roses* smell sweeter; or *Sorrell* set by *Rass*s, will make the *Rass*s sweeter, and the like: because severall, or contrary kinds of *Plants*, meete not with severall kinds of juyces in the same Soyle,
(shall

(shall we think there are hundreds, or thousands of severall joyces in one Garden) though they draw the same juyce they convert it, and assimilate it into their severall natures, according to the innate, and intrinsicall Forme that every one hath, as was said before of severall kinds of grafts upon one tree.

The altering of the Sent, Colour, or Taste of Fruit, by infusing, *Experiments.*
mixing or letting into the Bark, or Roots of the tree, Herb, or Flower, 499.
any coloured, aromaticall, or Medicinall substance; are but Fancies:
All alteration of vegetables, in those qualities must be by somewhat
that is apt to go into the nourishment of the Plant. Making Herbs,
and Fruits Medicinable.

Divers Authours (in their Books of planting Fruit-trees) have *Observation.*
given severall directions for the altering of the Sent, Colour, and
Taste, of Fruits; but none of them from any well grounded Expe-
rience. Many particulars are mentioned, and set downe at large:
(with reasons, and Experience against them; that men may not be
deceived by them, and loose their time, cost, and labour about such
Fancies) See pag. 91, 92. &c. of the *Treatise of Fruit-trees.*

But as this Authour saies well, The likeliest way to make herbs,
and fruits Medicinable, and to give them a good relish is the often
wating of the Tree, or Plant with that substance, which we de-
sire they should partake of, for this is certaine, (and we see it
by manifest experience) that Plants, and fruits of Trees, do some-
what taste, and partake of the nature, and virtues of that kind of
nourishment which they continually draw. As if Trees grow up-
on a low, moist, watrish ground, the fruits will be more spongy, and
watrish, then the same kinds of fruits, where the trees grow up-
on a dry, sandy, soyle: So if Cabbages, Turneps, Carrets, and such
like, grow in a Rancke Soyle, full of Filth, and Dung, they have
a virtue, and relish accordingly, not halfe so sweete, and plea-
sant, as the same kinds growing upon pure mould, or sweet sandy
soyle: so here, If men think it worth the while, if they judge it
will answer their labour, cost, and time, to water Fruit-trees,
herbs, plants, and flowers, with Aromaticall, and Medicinall sub-
stances: Infusions of Cinamon, Ginger, Cloves, Mace, and such
like spices, to give a pleasant relish, or (for physicall respects)
with Hellebore, Opium, Scammony &c. If they can afford to give
them enough from time to time, of these things, (wating their

Roots abundantly therewith) why then its probable *such Plants* will somewhat partake of their virtues: but as for *slitting of their Roots*, or *perforating the body of the Tree*, and *infusing the medicine*, or *steeping the seede*, or *kernell*, in *some Liquor* wherein the medicine is infused, these I account as good as nothing; not only for that the virtues cannot be communicated, or transfused by this meanes, but also because, though they were carried to all the parts of trees, and plants, yet *such small quantities* would be *indiscernable*, the effect would be as *nothing at all*.



The VI. CENTURY.

Experiments
501. &c.
Curiosities about Fruits, and Plants.

It is a curiosity to have severall fruits upon one tree: some early, and some late, ripe fruits all *summer*. This is done by *Grafting severall fruits upon one tree*: But I conceive the diversity of fruits must be such as will graft upon the same stocke, not contrary kinds.

Observation.

It is true, (as the *Author* saies) that severall fruits may be grafted, or *Inoculated upon one tree*, some early, and some late; but yet (as he also observes) they must be of such as will take, and grow together, as many kinds of *Apples*, upon one tree, so of *Pears*, and of *Cherries* among themselves, and the like: And it is not true which some *Authors* have written, that *Cherries*, and *Plums*, *Figs*, *Nuts*, *Peaches*, and such like, will grow together upon one tree.

Yet a Book, intituled the *Country farme* (composed by some *Doctors of Physicke*, and other inexperienced men) is full of such odde conceits, pag. 360, 361, &c.

Experiment.
502.

It is a curiosity to have fruits of divers shapes, and figures, This is easily performed by moulding them when the fruit is young, with moulds of earth or wood, of severall shapes on the inner side, as it is in mould workes of Liquid things: let the moulds be made partible in the middle, that they may be opened.

Experiment.
503.

Also Trees, or Fruits may be with *Inscriptions*, and engravings upon

upon them; by Writing with a Needle, or Bodkin, or Knife, when the Trees, and Fruits are young, and as they grow greater, so the Letters, or figures will be more plaine.

If men be not content with the *Naturall forme of Fruits*, they *Observation.* may (if they have so much leasure to spare) put them into moulds as is said, to make them of an *artificiall forme*; As for *Inscriptions, figures, and shapes upon Fruit trees*, that is (as the Author saies) performed by *scoring through the Barke* with the poynt of a knife, in the spring, or summer, what Letters, or Words, or Figures a man please; which as the tree growes, will become more plaine, and discernable, and that for many yeares after: I use to make a Letter, or two, or three, or more upon all young trees that I graft, whereby to know the severall kinds of Fruits, (or if any be stolen and found againe, they may thereby be knowne) And I have perceived the Letters plainly Nine, or Ten yeares after, or more.

But as for the prescriptions of some *Authors* about these things they are vaine, and ridiculous: who direct to write upon the *kernells of seeds*, that we sow, and set, and upon the *Buds* that we inoculate what letters, or shape we please, and the *fruits* coming thereof, will have the same upon them; See hereof *Treatise of Fruit-trees* pag. 97.

You may have Trees appavelled with Flowers, or herbs, by boring *Experiment.* holes in the bodies of them, and putting into them good mould, and setting slips, or sowing seeds therein, those Roots of a more Ligneous nature, will perhaps incorporate with the tree it selfe. 504.

This is a *Curiosity* indeed, which may be done (as the Author *Observation.* saies) by making holes in Trees, and putting in good mould; care must be taken to make them *slopesides*, with the bottome downwards; that so both mould, and moisture may keepe in them, about the Roots of things that are set. But yet I should be loath to spoyle a good tree thus, for it most needs make it rot, and perish in a certaine time: howsoever, for one, or two of indifferent kinds, it may rather be admitted, for satisfaction in this *Curiosity*.

Beauty in Flowers is their prebeminence, It is observed, that Gil- *Experiment.*

ly-flowers, Violets, &c. that are coloured, if they be neglected, and not watered, nor new moulded, nor transplanted, will turne white: And its probable, that the white with much culture, may turne coloured.

Observation. I doubt not but that the *Flowers* aforementioned, and divers other kinds, will not only loose the *beauty of their Colours*, if they be not sometimes removed into new, and better mould, but also that they will in time change from *double*, to *single*; or else be much *smaller*, then they will be in *fresh, strong mould*. Therefore, every other yeare, at least, let the mould be changed, more or lesse: lay about all their *Roots*, some good, *fresh, black mould*. And that we may have every yeare new, *young Roots*, and that the best kinds may be increased, the slips must be laid in *summer*; as I shall here shew how, though it be a common thing, and well knowne amongst many, yet for the sake of those that know it not, and desire it, I shall briefly speak of it.

About the *beginning of July*, (and for six, or seaven weekes afterwards) *slips* may be laid thus. Observe the *fairest*, and *biggest slips* upon the *Roots*, and with a sharp Knife, cut halfe way through the *slip*, on the out side, neere to the bottome, just from a *joynt*, and cut the *slip* upwards, through the middle of it, about halfe an inch, (or little more) in length; then with a small hook stick fasten the cut part downe into the mould, yet so as that the *slip* be not broken, or parted from the *Roote* wherein it growes: so do to the rest of the *slips* upon the same *Roote*, or to as many as you please: having so done, then mould them all up, with *fresh mould*, that is, cover all the cut parts on every side with mould, then water them, and presse the mould close about them, and so let them rest.

Afterwards, in a *Month*, or *five weekes* these *slips* (so laid) will have taken *Roote*, (especially if their mould have beene watered now and then) then they may be cut off from the old *Root*, and taken up, and so set againe in *fresh, good mould*, prepared in the *Garden plat* for that purpose: Or else they may be let alone untill the *spring after*, and then set: these *young, vigorous Roots*, set in good mould, and watered (now, and then) with *fat water*, will have large flowers: especially if in *June* we break off, *most of their buds*, and suffer only some few six, or eight, or ten
flowers

flowers upon a Root, these the Root will easily maintaine, and each of them will have the more nourishment, then when they are suffered to spindle up as many as nature will, such must needs be *smaller flowers*, the Root being overburdened.

The *Clove-Gilly-Flower*, is of all other the *best*, for use, it is well knowne how usefull they are to make *Syrups*, which are very *Cordiall*: they are good for *Sallets*, prepared with sugar, to use all the yeare long: and have the *best smell* of any other; therefore increate these, as much as may be, not only of *slips* (for *slips* of these will grow without laying, better then of other kind of flowers) but lay many of them also for more certainty.

And among these preferre those which are *largest*, and of the *deepest colour*, and those that are without *Hornes* (as they call them) they also are increased of *seeds*, as other kinds.

I have been the larger upon this particular, (and somewhat digressed from the *Experiment*, which chiefly concerned *colour*) because hereupon mainly depends the *goodnesse*, and *flourishing* of a *Garden*, as to these kinds of flowers; for if we know not the best way to *propagate flowers*, nor to plant, and order them being prepared, the *Garden* will be but poore.

Whites are more inodorate (for the most part) then *Flowers* of the same kind *Coloured*: We find also that *Blossomes* of trees that are *White*, are commonly inodorate, As *Cherries*, *Pearses*, *Plums*. Whereas those of *Apples*, *Crabs*, *Almonds*, and *Peaches*, are *blushy*, and smell *sweete*. Experiment. 570.

I conceive this *Experiment* was not thoroughly weighed, and *Observation* try'd: for to my *Observation* *white Flowers*, have (generally) as much *smell*, as those *Coloured*: to instance in the *white Rose*, the ordinary kind, and the *White Musk Rose*, I suppose they have as much *smell* (especially the *Musk Rose*) as *Red Roses*, or *Provosts*, or *Velvet*, or *Marble*, and some other coloured kinds yea and more too: And as for some *white flowers*, as the *white Lilly*, and some other kinds, their *smell* is more full, and rank then many *Red*, or other coloured flowers: And for *blossomes of Trees*, some that are *white*, smell as much, as some that are *Red*, or coloured, for what smell hath the double *blossome Peach-flower*, or the *Nectarin*, or any kind of *Peach Blossomes*, which are all coloured,

loured excellently) more then the Blossomes of Pearre-trees, Cherry, or Plum-tree, which are said to be inodorate: So that I conceive there must be some other Cause found out, why some Flowers, and Blossomes smell not, (or smell not so much as some others) then that which is assigned; viz: the thinnesse, or scantnesse of that substance which maketh the Flower is not the Cause why some Flowers and blossomes smell not, so much as others: the same is the Cause why some Flowers, and fruits are bigger then others, and of a better tast then others; which proceeds (undoubtedly) from the specifick, or distinct intrinsecall Forme, of each particular Plant, which the God of nature hath fixed in it as a Law, which nature never violates, but keeps in all kinds of Creatures.

Experiments Contrariwise in Berries the White is commonly more delicate, and 508. & 509. sweeter in tast, then the Coloured; as we see in white-grapes, white-Rasps, White strawberries, Currants &c. the Cause is, for that the Coloured are more juiced, and coarser juiced, and therefore not so well, and equally concocted.

But in Fruits the White commonly is meaner; as in Plums, The White harvest Plum is a base Plum, the Muske, Damazene, and other black Plums, are of the best &c.

Observation. This proves what was last said to be true, viz. that it is the specifick Forme of every Plant, that causeth the difference of tastes in Fruits, and smell in Flowers. For we see by experience that some white kinds of Flowers, Fruits, Berries &c. are sweeter, and better in smell, and tast, then some others of Coloured kinds: and that likewise some other coloured kinds of Flowers, Fruits, and Berries, are sweeter, and better then some white kinds: so that it is a hard matter to find out the particular Cause, and give a distinct reason, of the differences of particulars, though men may venture at it.

Experiments. Gilly-flower seeds of one kind, being sown, will come up of severall 510. Colours: The Cause is (no doubt) that in earth though it be contiguous, and in one bed, there are severall juices; and as the seeds doth casually meete with them, so it cometh forth.

Observation. It is true, that Gilly-flower seeds of one kind sown, will bring up

up severall kinds: some double, and some single: but I much doubt whether it be, for that the *seeds must with severall juyces in one bed of earth*: for can it be imagined that two, or three very small seeds, that lye as close together as can be, in the earth, should draw *severall juyces*, from the very *selfe same mould*, so as to cause them to vary in the colour of the flowers? May it not rather be said, it is from a *Law in Nature*, which God of his generall bounty to us, hath put into it; though we stand not in absolute necessity of them, yet in that he gives us such *variety*, and *choice*? But for men to find out, and shew a *particular Cause in Nature*, of this *variety*, will be as hard to do, as to shew a *Cause why severall kinds of Grafts, upon one tree, drawing one and the selfe same sap, do yet bring forth different Fruits*; other then to say, *they keepe their severall Natures*, and so convert the *same sap* into severall kinds of Fruits. And why may not the same be said of *severall seeds, and Roots, in one Bed, drawing the same juyce of the Earth*? See Exper. 481.

Concerning sowing of *Gilly flower seeds*, I advise those that sow it: first, to gather it from the *fairest*, and *best Clove-Gilly-flower*, and that it be full ripe, ere it be gathered, which is, when it is turned *black*. Also seede may be gathered from other *double flowers*, some commend especially the *London White*, others, a flower cald the *old mans heads* and say the greatest varieties come from these; some are for one, and some for another, but so it is, that *most will be single flowers from the best seeds*: but doubtlesse there is much in the ground in which the seede is sown; if it be *poore soyle*, they are more like to be more *single*, then if the ground be *speciall rich mould*; for (as was said) *barren ground*, as it makes flowers *small*, so sometimes in it, they turne from *double to single*, so it may be said as to the *seeds when sown*.

It is a *Curiosity to have Flowers double*, which is effected by often *Experiment*. Removing them into new earth, as on the contrary part *double flowers, by neglecting, and not removing, prove single*. And the way to do it speedily, is to sow, or set seeds, or slips of flowers, and as soone as they come up to remove them into new ground, that is good. Enquire also whether *Inoculating of Flowers* (as *Stock-Gilly-flowers, Roses, Musk-Roses &c.*) doth not make them *double*. 513.

Observation.

For the first part of this *Experiment*, to make *Flowers double*, or *fairer*, it is a good Rule, as the *Author* hath set downe, especially if withall we observe the directions given in the *Observation* to the 506 *Experiment*, in breaking off some of the *Buds*, and *Stems*, and letting some few grow, to be *flowers*.

Concerning *Inoculating of Flowers* (*Stock Gilly flowers*, or any other kind) I know no such thing, and believe it is but a *fancy*, for having heard of it, I have considered of the matter, and cannot find, nor apprehend what it is that should be *Inoculated*; there are no *buds*, nor any thing like a *bud*, to be taken off for that purpose: And I have spoken with divers who have had skill in *Flowers*; and they have said they have heard of such a thing, but have never seene any thing thereof in *Experience*.

There are three other waies sufficient for the propagation of *flowers*, which are, by *Seede*, by *Slips*, and by *Layers*, but by *Laying* is by far the *bist*, as is shewed at large, in the *Observation* to the 506. *Experiment*. But as for *Inoculating Roses*, (*Musk-Rose*, and all other kinds) that is very common, and sure; yet as to the intent of the *Author*, viz. (to make them double) it succeeds not: and he himselfe hath given the Reason, truly, upon another occasion: That is, *all Buds*, and *Grafts*, *Rule*, and *keepe their owne Natures*, and so change not, neither as to the making *Roses more double*, or *better* then they were before, nor as to the *bettering of any Fruit*: as hath beene shew'd heretofore.

Experiment.
541.

The making of *Fruits without Core*, or *Stone*, is likewise a *Curiosity*; If a *Cions*, or *shoote*, have the *Pith* finely taken forth, (and not altogether, but some of it left, the better to save the life, it will beare a fruit with little, or no *Core*, or *Stone*. The like is said to be of dividing a *Quick tree* downe to the ground, and taking out the *Pith*, and then binding it up againe.

Observation.

These prescriptions for making *Fruits without Core*, or *stone*, I cannot think are from this worthy *Author*, but they are such as are set downe by others, which I have seene: And they are as weake, and groundlesse conceits as many other things asserted by them, about changing the species of *Fruits*: and making them of an *aromatique*, and pleasant taste, and altering the *Colour of Fruits*, and such like conceits: the variety of which (I suppose)
hath

hath beene sufficiently laid open in a late *Treatise of Fruit-trees*: see there *Errors discovered* pag. 91 92. &c. For, let this thing be a little considered, and it will appeare to any man that has but halfe an eye, to be vaine: suppose a *shoote*, or *Graft* (as is here said) be *cloven*, and all, or most of the *pith* taken out, and admit such a one be Grafted, (or any way set in the ground, so as to take roote) and grow; yet we know all the *Bark*, and *Buds*, are as they were before; the taking out of the *Pith* makes no alteration at all, more, or lesse; we know, in all the *Buds* that are *Inoculated* not only all the *Pith*, but also all the wood is cast away; and nothing made use of but only the *Buds*, and *Bark* of any young *shoote*; and yet we see by continuall Experience what the effect is; that these *Buds* bring forth the same Fruits, as the trees from which they were taken.

And if a * young tree were divided, and the *Pith* taken out, from the top to the *Roote* (as is said) there is lesse Reason, (if lesse can be) that that should work this effect; because all the *side twigs*, (if it have any) would have *pith* still, And if it have none, or if the *Pith* were taken out of all; yet we know the increase of the Tree, must be still from the *Buds*; which have the same nature in them, as *Grafts*, or *Buds* *Inoculated*.

* Some old fruit trees are hollow, all along their bodies, having no *Pith* at all, which bring forth fruits with no lesse Core, or Stone for that.

It is very probable, that any *sower* fruit, grafted upon a stock, that beareth a *sweeter* fruit, may both make the fruit *sweeter*, and more voyd of the *harsh* matter of the *kernells*, or *seeds*. Experiment. 515.

It is Reported, that not only taking out the *Pith*, but the stopping of the *juice* of the *Pith*, from rising in the midst, and turning it to rise on the outside, will make the fruit, without core or stone. Experiment. 516.

The Rule is Generall; that whatsoever will make a wild Tree, a Garden tree, will make a Garden tree to have lesse Core, or stone. Experiment. 517.

It is true, that a *sower* fruit grafted upon a stock of a *sweeter* kind, will make the fruit somewhat *sweeter*; yet so as that the *Graft* still governe, (as this *Ambrose* elsewhere hath said) and as Experience proves; But the fruits will have *kernells*, and *seeds*, as before.

As for taking out the *Pith*, Or stopping the *juice* of the *Pith*, it is all one, as to this intention. F Concerning Of this See Exper. 514.

Concerning the generall Rule in the 517 Experiment I know nothing that will make a *Wild tree*, a *Garden tree*, but grafting it with good kinds of grafts; And I am sure grafting will not make any fruit to have lesse *Core*, or *stone*.

Experiment. Plants for want of Culture degenerate to be baser in the same kind; and sometimes to change into another kind.

518.

Degenerating
of Plants.

1. By standing long unremoved.

2. By drought, and drynesse of the Earth.

3. By the Barrennesse of the earth, removing Plants into worse mould, or forbearing to renew, and help the ground with dung, or fresh mould.

Observation. It hath been (^a) said, That *Violets*, and some other Flowers, will change from double to single, or change in colour, when the mould wherein they grow, becomes barren, and barrellsse, through neglect; which is the same in substance with all the three particulars mentioned in the Experiment. Therefore there is need of some fresh mould from yeare to yeare, for the preserving of Flowers in their perfection. See hereof at large, Experiment 506. and 510.

Experiment.
519.

Whatsoever Fruit useth to be set upon a Roote, or slip, if it be sown, will degenerate: And most of those Fruits that use to be Grafted, if they be set of kernells, or stones, degenerate. It is true, that Peaches do better upon stones set, then upon Grafting: And the Rule of exception should seeme to be this; That whatsoever Plant requireth much moisture, prospereth better upon the stone, or kernell, then upon the Graft; For the stock though it giveth a finer nourishment, yet it giveth a scanty than the Earth at large.

Observation.

The reason why Fruits that come of Seeds, or stones, do degenerate (for the most part) and become worse then the Fruits out of which the seede was taken, I conceive to be this; Fruits that come of seeds, or stones, do partake both of the Graft, and of the stock of that tree from which they were taken; so that although the graft was of a speciall good, and choice kind, yet the stock whereon it was engrafted being a Crabtree, (or some other wild kind of Fruit-tree) the seede participates of both Grafts, and stock, and so

so brings forth a *mungrell fruit*, between them both: For although *Grafts* governe, (as hath beene said) and may be said to bring forth the *same kinds*, yet so as that the *stock* hath some influence into the *Fruits*, according to the goodnesse, or badnesse of the *stock*.

But now: In case the *Tree* from which *seeds*, or *stones* are taken, be an *ungrafted tree*, one that came of *seeds* it selfe, then I doubt not but that the *seeds* of that *Tree*, will bring forth the very same kinds againe, without any alteration.

As to that the *Author* saies concerning *Peaches*; that they come better of *stones* then *grafting*; I suppose there is a mistake in this: for although it be true, that some *Peaches* will come good of *seeds*; yet doubtlesse not better, then by *Inoculating*, (they take not with *Grafting*) for we see by constant Experience, that *Peach Buds* set upon good *stocks*, will bring forth the very same, as the trees from which they were cut; if the rest of their culture, and ordering be the same, or as good.

And as for some that have come of *stones*, I have observ'd they have beene none of the best: many that have come of *stones* have beene starke nought; though some have beene good.

And why *Peaches*, or any other kind of fruit, should be thought to come better of *stones*, or *seeds*, then by *Grafting*, or *Inoculating*, I apprehend not any reason: as for that which is given; That the *stock* giveth a *scantier nourishment*, then the earth at large; let it be considered: The *Twigs* and *Branches* of a *Peach tree*, (or any other tree that came of *seeds*, or *stones*) they receive sap, and nourishment from a *stem*, or *body*, and *Roots*, as well as if the *Tree* were *engrafted*; the *twigs*, and *branches* of an *ingrafted tree*, have as free, and full nourishment, (without any obstruction) as the *branches* of an *ungrafted tree*; the *branches* of a *grafted tree*, have no finer nourishment, nor *scantier*, then the *branches* of an *ungrafted tree*: for we know, the *Roots*, and *Body* of a *Grafted tree*, and of an *ungrafted tree*, are alike: and the earth is as free, to the one, as to the other.

It is reported, That a good strong Canvas, spread over a tree, Experiment.
grafted low, soone after is putteth forth, will dwarf it, and make it 534.
spread: The Canvas plaine, for that all things grow, as they find Procerity, and
rooms. Lownesse of
trees.

Observation. It is true (as is said) That *Cloth* sometimes spread over a tree grafted low, (and suffered to lye on for a time) will cause it to spread much; And that this may be improved for our use, and benefit, this may be done: To plant some few *Cherry trees*, *Plum trees*, or other kinds, grafted low, and caused to spread much, and kept from rising up, by this means; keep the earth bare, cleane from *Weeds*, *grasse*, or any thing growing under, or about them: such trees (if they be good kinds) will beare much and fairer fruits, then *high trees*: the reflection of heate from the earth, will be almost as strong, as from a wall. And the fruits may be kept long, growing upon the Trees; even till after *September*, or *October*. For if a *Cloth* be sometimes, in hot weather, spread over them, and moistned, it will keep the fruits from ripening too soone (yet shade them not too much, lest they come not to full ripeness) Afterwards, the fruits being ripe, some old *Canvas* *hair-cloth*, (or such like) may be spread over them, to preserve the fruits from *Birds*, and may be so kept long; (look that *snails* eat them not) Or else a *Net* may be spread over such trees, to preserve the Fruits: I have knowne faire *Cherries* upon Trees towards the middle of *October*. I conceive the great bearing *Cherry*, or other late ripe, rare *Cherries*, to be the best to keepe long, in this manner: such are more hardy then other kinds; *Cherries* very late, are as great *Rarities*, as those that are early.

Experiment. Trees are generally set of *Roots*, or *kernells*; but if you set them of slips (as the *Mulberry* &c.) they will grow, and these (as is reported) will be dwarfed trees; the Cause is, for that the slip draweth nourishment more weakly, then either a *Roote*, or *kernell*.

Observation. *Mulberry-tree* slips, and some other kinds of trees that will grow of slips, may be made dwarfed trees, if we will order them accordingly, that is; if we suffer all the side branches to grow: or such slips (taking *Roote*) may be made high trees, in time, if we cut off all the side branches, and preserve only the middle, straight shoot. But indeed at first, for certaine yeares, they must needs be dwarfed trees, untill they can rise higher, which in time they will do, if they take *Roote* well, and the ground be good.

Experiment. In *Clay* grounds, all *Fruit-trees* grow full of *Mosse*, both upon body, and *Boughes*: which is caused partly by the coldness of the ground, whereby the Plants nourish lesse: And partly by the Toughness of the earth, whereby the sap is stopt in &c.

We see by Experience, that trees growing upon cold, and moist *Observation.*
 grounds, or Clay, gravell, barren grounds, do generally breed
 Mousse, which is caused, (as the *Author* saies) by the coldnesse
 and scantnesse of the nourishment: And therefore there is neede
 (besides the scraping off of the Mousse) to lay the Roots of Fruit-
 trees as dry as may be in such moist grounds, by trenching, or other-
 wise, and also to bring in some soyles to make the ground better, and
 warmer, as much as may be.

It is to be noted, that (commonly) trees that ripen their fruits la- *Experiment.*
 test, do blossome soonest. 578.

Some Fruit-trees indeed which bring forth their fruits to perfe- *Observation.*
 ction, and ripenesse, late in the yeare, do blossome early; as ha-
 ving neede of the heate of the sunne to ripen them, all the sommer:
 But some other kinds blossome early, and ripen their Fruits also ear-
 ly; As *May Cherry trees*, the *Premorden-plum*, also the *Mirabi-*
lon plum-tree blossomes exceeding early, and the tree brings forth
 his Fruit early. I have got ripe plums from this tree about the be-
 ginning of July, which is early for Plums.

There be fruits, (but rarely,) that come twice a yeare, As some *Experiment.*
Peares, *strawberries* &c. *Roses* beare twice, but it is not without 579.
 cutting.

The *Winsor Pear-tree* does blossome and beare fruits twice in the *Observation.*
 yeare, some yeares: but the second bearing I could never see worth the
 gathering, for they are poore, small, hard fruits, not worth any thing.

I have seen *Cherries* twice in the yeare upon one and the same tree,
 An early *Flanders*, which I set upon a very warme southwall, bore
 ripe *Cherries* about the twentieth of May, And the same tree bore
 a couple of ripe *Cherries* afterwards, the one about the sixth of
 October, the other a fortnight after.

Strawberries ordinarily beare twice a yeare, though but few the
 second time. As for *Rose-trees*, some *damask Roses*, and some *Pro-*
vosts beare a second time, the same yeare, though but few, if cut
 soone after the first bearing in the full Moone. But besides, there is
 a *Rose-tree*, called the *Monthly Rose*, which beares *Roses* untill the
 coldnesse of the winter stop it, about November.

Nothing procureth the lasting of Trees, Bushes, and Herbs, so much *Experiment.*
 as often cutting, For every cutting causeth a Renovation of the juyce of 586.
 the Plant, that it neither goeth so farre, nor riseth so faintly, as when
 the plant is not cut.

This is to be considered in cutting of trees, else instead of mak- *Observation.*
 ing

ing them *last longer*, we *shorten their lives*. That is, that we so cut them that the *wet*, and *moisture* get not into their bodies, which in certaine yeares will rot, and spoyle them: as we see in many *pollard trees*, which are *hollow* all along their bodies: And many *Fruit-trees*, having had their heads cut off, when they were great Trees, and grafted againe; we see the *wet*, and *moisture* gets in at the top, before the Grafts can cover the head, and rots the tree, which can never grow great after, nor *last long*, but rots, and decays in few yeares. Whereas Trees that are *sound*, *Fruit-trees*, and all other kinds, must needs *last much longer*: yet as to cutting of *side branches*, and all *superfluous branches*, (which are not great) that conduceth to the *lasting of Trees*, as giving the *more plentifull*, and *vigorous nourishment* to those that are left, and to the whole body.



The VII. CENTURY.

Experiment.
624.

Quinces, or Apples if you will keepe them long, drowne them in Honey, but because Honey (perhaps) will give them a taste *overlushious*, it were good to make tryall in powder of sugar, or in *syrrup* of wine only boyled to height.

Observation.

As for keeping of Apples, keeping them in honey, or sugar, would be too costly: some *Pippins*, and *John Apples*, will (of themselves) last till new come againe: its good then to get such kinds, that we may have for use all the yeare long, without charge in keeping.

And for keeping Quinces, they are kept long in pickle, made of the *Parings*, and *Cores*, of those that are used for *Marmalade*, well boyled in water, with Salt, and Ginger. Or a better way (as some account) is to keepe them in *small Ale*, a penny a Gallon, and to draw it off, once in ten, or twelve daies, and put in fresh; thus its said, they will last two yeares.

Experiment.
627.

Take Grapes, and hang them in an empty *Vessell*, well stopped, and set the *Vessell*, not in a *Cellar*, but in some dry place, and its said they will last long.

Observation.

Grapes will keepe for some short time, in this manner, as hath been said: but when cold moist Aire towards winter comes on, they will begin to mould, and rot: I have kept some in *Glasse*, as close stopp with *Corke*, and wax, as I could, supposing the exclusion of Aire, had

had been best, but though they were good certaine weekes, yet afterwards they began to perish: I account it better to hang the *Bunches* in a *Kitchen*, or some *warmed Room*, where *fire* is much kept, that so some of their superfluous moisture may be a little dried up; I have kept them thus many weekes. For though the *Aire* be much shut out from them in any *Vessel*, yet that *Aire* that is shut in with them and their owne naturall moisture, will cause *putrefaction*; therefore there is neede of some degree of *warmth*, with *dryness*; Cut off some of the *Wood* with the *Bunches*, and cover them with *Paper* from *dust*, and hang them up.

Also a *Vine Branch* full of ripe *Grapes*, may be drawne in at a window, and Nailed up, upon the wall or ceiling, letting the branch grow still to the *Vine*, thus they will keepe long.

The *Juyces* of *Fruits* are either *Watry*, or *oylie*: I reckon amongst the Experiment. 633.
Watry, all the fruits out of which *drinke* is expressed, as the *Grape*, the *Apple*, the *Pear*, the *Cherry*, the *Pome-granate* &c. And there are some others which though they be not in use for *drinke*, yet they appear to be of the same nature, as *Plums*, *Mulberries*, *Services*, *Rasps* &c. And for those *Juyces* that are so fleshy as they cannot make *drinke* by expression (yet perhaps they may make *drinke* by mixture of *water*. And some of the *Watry Juyces*, after they have gathered spirit, will burne, and inflame, as *Wine*.

Concerning the *Juyces* of *Apples*, *Pears*, and *Cherries*, these are *Observation*: well knowne, and much in use, and esteeme: the two former with us in *England*, and all of them in other parts; And we might have *Wine* of *Cherries*, as plentiful in *England*, as it is beyond-sea, if men would but plant store of *Cherry trees*, of the best kinds, such as are fittest for this purpose: As the *Morelle-Cherry*, the *Charoone*, the *Black-hart*, and other kinds which have a pleasant tast, the *Juyce* of which is of a deepe red colour: These would make a delicate *wine*, especially for *summer time*; And which will last also all the *yeare*; as I have heard it credibly spoken, by a worthy gentleman, who dranke good *Cherry wine*, of a *Twelve month* old.

As for *Cider*, and *Perry*, these *Liquors* (especially *Cider*) begin to be better knowne to us, in some parts where they have scarce beene heretofore: And doubtlesse when men are better acquainted with them, and know their good properties, and virtues, in reference to *Health*, and *Long-life*, they will be more diligent in planting *Fruit-trees*, such as are best, and fittest for this purpose, As the *Pear-maine*, *Pippin*, *Gennet-Moyle*, *Red-breake*, and such like; which

which make *Cider* better then *French-winds*.

Concerning the manner of making *Cider*, and *Perry*, with the keeping, and ordering of it, I have spoken at large in my *Treatise of Fruit-trees*; See, the use of Fruits pag. 77.

See Mr Harlib's
Legacy of Hus-
bandry pag. 17.

As for *Plums*, it is affirmed, that there may be made an excellent Wine out of them, and also *Aquavita*, of those that are *swete*, fat *Plums*, as *Muske plums*, *Damsons* &c. And though the *juyce* be too thick of it selfe for that purpose, yet *water*, *Cider*, or some other *Liquor*, may be mixed therewith, which being put up into the Vessel; some *Honey*, *Yeast*, (or the like) must be mixed, to cause it to worke.

Experiment.
634.

It hath beene noted, that most *Trees*, (and specially those that beare *Mast*) are fruitfull but once in two yeares. The Cause (no doubt) is the expence of *sap*; For many *Orchard Trees*, well cultured, will beare divers yeares together.

Observation.

Some *Fruit-trees* beare store of fruits but once in two yeares; and I conceive it to be as naturall so to do, as to beare *such*, or *such* a kind of *Fruit*. And others are observed to beare store of *Fruits* every yeare, constantly; unlesse (perhaps) in some extreame blasting spring, which spoyle (in a manner) all: But for many yeares together, every yeare, some are knowne to beare *Fruits* exceeding full in the same ground, and with the same culture, as those that beare but each other yeare: so that we see the expence of *sap*, in the bearing yeare, is not the only Cause that *Trees* beare not the next yeare after; for some that expend as much *sap*, do yet beare the next yeare after, as full as before: So then, let care be taken, to chuse *Grafts* from those trees that we see by Experience are the best, and most constant bearers; and best fruits.

Experiment.
637.

The greater part of *Trees* beare most, and best, on the lower *Boughes*; but some beare best on the top *boughes*. Those that beare best below, are such as shade doth more good to, then hurt: for generally all fruits beare best lowest, because the *sap* tireth not, having but a short way; and therefore in *Fruits* spread upon walls, the lowest are the greatest.

Observation.

To my Observation, *Apple-trees*, *Pear* trees, *Cherry-trees* &c. that are good bearers, they beare all over alike. And generally all

*Therefore observe the directions given in the *Treatise of Fruit trees*, p. 70. in causing the bla-

Fruit-trees in these parts, have need enough of the sunne, and beare better in the sunne, then in the shade; But indeed as to *Wall-trees*, most commonly we see most fruits upon the lower *boughes*, and * *side-boughes*, And the reason I apprehend to be this: Not the tiring of the *sap*, in its going to the top branches; for the *sap* is too vi-

gorous,

grow, and too plentifully, in the top boughes, and thence it is we al-ches to spread
waies see the fairest, and greatest shoots towards the top of all wall-along the wall
trees, and commonly of all other trees. But the cause why the lower both waies
boughes, and side branches, have usually more fruit, then the top which causeth
branches, I conceive to be for that the sap naturally presseth up-fruit bearing.
wards, in greatest plenty, and runneth forth into shoots, and branches: Now nature being so intent, and vigorously active in one work
(viz. increase of the tree in those branches) it doth not put forth it
selfe, at the same time, in that other effect of bearing fruit upon the
same branches. But now, as to the lower boughes, and side-branches,
there nature is at work, but in a remisse, and weaker degree, as to
the increase of the branches, such grow but little, because the sap is
somewhat obstructed, and curbed by bowing the branches downe-
wards, and so does attend to the other work also, viz. the bearing of
Fruits.

And the truth of this is made more evident, if we consider the
same thing in all young trees: We know young Apple-trees, Pear-
trees, and the like, when, and while they grow, and increase ex-
ceedingly in all the parts, shooting forth great, large, strong shoots,
and branches, they beare but little fruit, or none at all: But after
certaine yeares, when they grow not so much, when they shoot lesse,
then they fall to bearing fruits more abundantly

There be Trees that beare best when they begin to be old; As Almonds, Experiment,
Peares, Vines, and all trees that give Mast. The Cause is, for that all 638.
trees that beare Mast, have an oylie Fruit: and young trees have a more
watry iuyce, and lesse concocted. But the most part of Trees: Amongst
which are Apples, Plums &c. beare best when they are young.

Pear-trees, Apple-trees, Plum, and Cherry trees, if they be good Observation,
bearing kinds naturally, after they are three, or foure yeares growth
(and some sooner) do all beare store of fruits, untill they be ex-
treame old, and in a decaying, dying condition; And therefore in
planting of Fruit-trees, be sure to procure those kinds that are
knowne by Experience to be good bearers, and good fruits, and such
will beare well, both when they are young, and when they are old,
untill extreame age.

Were I to plant an Orchard, or Garden of Fruit-trees, and might
have Trees at hand, freely, for nothing, of indifferent, common kinds,
and but indifferent bearers, I would rather chuse to fetch those that
are choice kinds, and speciall bearers one hundred or two hun-
dred miles (if they could not be had neerer) and there pay deare

for them too, besides all other *Charges*, then take those at hand, for when men plant *Fruit-trees*, It is not for a few yeares, but for severall generations: therefore take speciall care to have the best kinds, for bearing, and for Relish, or tast: that is the foundation of the work, the principall thing in planting.

Now when *fruit-trees* are growen to extreame old age, and therefore beare but little, this may be done; which will make them (as it were) young againe, for certaine yeares, and to beare exceeding much fruit yearly: That is, Cut off their Heads, or big boughes, not straight over, but a slope, that so Raine, and moisture may not rest upon the top, to rot it: These great Boughes will (the next sommer) put forth many young shoots; which may be Inoculated the same sommer, or Grafted the spring after, with speciall bearing kinds: And these old Bodies having young heads (which draw sap vigorously) will be much refreshed thereby: and such trees will beare store of fruits many yeares after.

Experiment. 653. The Roots of Trees do (some of them) put down-wards, deep into the ground; As the Oake, Pine, Firre &c. some spread more towards the surface of the earth; As the Ash, Cypresse-tree, Olive &c. The Cause of this later may be, for that such Trees as love the sunne do not willingly descend farre into the Earth.

Observation. It is true, The Roots of Oake-trees, and some other kinds, shoot downe deeper into the Earth, then Ash-trees, and some other trees: May not the Reason be (why some put their Roots deeper then others) because those Trees have greater, and larger bodies, then others: and Nature layes the foundation answerable to what is to be set up on it: Now Oakes being the greatest Trees, Nature is wise enough (according to a Law God hath put into it) to make the Roote or foundation Answerable: Otherwise I conceive, the Roots of all trees would be as neere the top of the ground as may be, as loving the sun, as having an absolute need of it in order to their growth; And I am perswaded, that the appetite of the spirit, in all Trees whatsoever, (one as well as another) is upwards, and not downewards, and never exerts it selfe down-wards, but upon necessity: and in order, or in subordination, to the growth of the body of the tree, above ground.

Experiment. 654. It hath been Observed, that a Branch of a Tree, being unbarked some space at the bottome, and so set into the ground, even of such trees as if the barke were set on, they would not grow, yet contrariwise we see that a Tree pared round in the body, above ground, will dye: The cause may

may be, for that the unbarkt part draweth the nourishment best, but the bark continueth it only.

It is true, some branches that are unbarkt at the bottome, and set in the ground will grow: of some kinds of *Apple-trees*; As the *Quodling*, *Nurs-garden*, *Moyle*, and some other kinds, that have soft barks: Not because, (nor I suppose the sooner) for that the branch is unbarkt, for such will grow of cuttings, or slips, though they be not at all unbarkt, And those that be unbarkt and grow, it is not the unbarkt part that draweth nourishment best, nor that draweth it at all; but the Roots put forth from the bark, even at the very edge of the cut part, and also some breake out of the Bark where it is not cut, As we see in those branches of Trees from which we get Roots while they grow upon the tree, by disbarking of them, an inch round, and tying mould about: See how, at large, *Treatise of Fruit-trees*, p. 136. Observation.

The grafting of Vines upon Vines (as I take it) is not now in use; the Ancients had it, and that three waies: The first was infision, which is the ordinary manner of grafting. The second was Trebriation through the middle of the stocke, and putting in the Cions thre. And the third was, paring of two Vines, that grow together, to the marrow, and binding them close. Experiment. 668.

I have tryed severall waies, to graft Vines: by cleaving, or infision on, (as the Author calls it) and also by paring two Vines, the stock, and Graft, on two sides, which is my usuall, and best way of grafting other *Fruit-trees*, but neither took effect: so that I am perswaded those *Fruit-trees* that are so easily propagated by other meanes, as by laying downe the Branches, into the earth, and by cuttings, that these will not take with Grafting, or Inoculating as Vines, *Mulberries* &c. I have tryed many Experiments about *Mulberries*, both for grafting, and Inoculating, upon severall kinds of stocke, and yet none succeeded: but *Mulberries* are increased by laying downe the Branches, and by cutting, as Vines are: so that I conceive this grafting, mentioned by some Ancient Authors, is but a conceit of theirs, (a grafting in the braine) instead of a real Experiment, like multitudes of other things recorded by some who (its probable by what they say) had no Experimentall knowledge, in the things they spake. See the Observation upon the Experiment. 477.

As for Maturation of fruits, it is effected by heat, motion, attraction; and by a rudiment of putrefaction, for the inception of putrefaction, hath in it a maturation. Experiment. 316.

Concerning the maturation or speedy ripening or concocting of

Fruits, all kinds of *Heate* (as the Author saies) hastneth it faster, or slower, according to the degree of *heate*: As we see by Experience, *Apples*, or *Peares* laid upon a heape together (being newly gathered) they mellow, and ripen faster then if they lay single, at distance one from another. Also *Apples* covered in *Lime*, hay, straw, &c. will be mellow, in a short time; But the most speedy way to ripen hard fruits, and to abate the grosse tartnesse of them, is the common Experiment by a gentle *heate* before the fire, or in an *Oven* after bread is drawn.

So we see (as the Author observes) If fruits are eate with *Wasps*, *Hornets*, *Birds* &c. some part of them, the rest sweeten, and ripen sooner, putrefaction beginning, and hastning by reason of solution of continuity, in that part.

Experiment. We see that *Beere* or *Wine* in *Bottles* close stopped lasts long: And
343. that *Fruits* closed in *Wax* keepe fresh: And likewise bodies put in *Hony* and *Flower*, keepe more fresh.

Observation. It is true, that *Liquors* when they are well settled in the *Vessell*, (after a certaine time) and after drawn out into *Bottles*, and stopped very close with *Corke*, and set in a *Cellar*, or buried in sand, such will be much more fresh, and quick then the same *Liquor* in a great *Vessell*, especially if any part of it be drawn off: And therefore this is a good way to keep *Cider*, *Perry*, *White-Wine*, or the like, and that for a long time together.

As for *Fruits* closed in *wax*, or put in *honey*, I find that even *Cherries* (which are more subject to corruption then many other kinds of fruits) will keep fresh, many weekes together, more then they will do of themselves in the open *Aire*: exclusion of *Aire* preserves them for a time, but yet putrefaction at length will worke within, because of the *superfluous* moisture, which had need of drying up. I have tryed *Fruits* in *Honey*, (*Apricots*, *Plums*, *Cherries*) and they held good two, or three *Monthes*: afterwards putrefaction began.

Experiment. A *Bottle* of *Beere* buried foure foote deepe in the ground, became
378. more lively better tasted, and clearer, then it was; and a *Bottle* of *Wine* in like manner: A *Bottle* of *Vineger* so buried came forth more lively, and more odoriferous, smelling almost like a *Violet*, after a *Months* buriall, all the three came forth, as fresh and lively, as not better then before.

Observation. This is certaine, That *Beere*, *Ale*, *Cider*, and *Wine*, when well settled, and cleared in the *Vessell*, and drawn off into *Bottles*, and well stoppt with *Corke*, and *wax*; will continue fresh, and good, much longer

longer then in the Vessell: If the Bottles are buried in sand, (as was said before) or buried a yard, or more in the ground: The reason I conceive is, for that as no Aire can possibly penetrate so deepe, and through the Bottle, to the Liquor, nor can the spirits of the Liquor (in the least) get out: so neither can the Liquor suffer any prejudice by alteration of the Aire from heat to cold, as it does in vessells above ground.

Tryall hath beene made, with earthen Bottles, well stopped, hanged Experiment^d in a well of Twenty Fathoms deepe, at the least, and some of the Bottles 385. have been let downe into the water, some others have hanged above, within about a Fathome of the water: Wine, and Beere in these Bottles have kept better, then in a Celler, but those above water were apparently the best.

The Cause why Beere, Wine, Cider or the like, will keepe better Observation. thus, and in Earth, sand &c. (as before) then in Vessells, or Bottles above ground, I apprehend (as was said) for that the Aire is excluded, and the spirits shut in: also the Aire above ground is subject to variation, sometimes more hot, and sometimes more cold: which somewhat stirs, and affects the spirits of the Liquor in the Vessell, whereby they become weaker.

I have heard it reported for a truth, That Bottles of Wine, (or some other Liquor) were found in a deepe draw-well, which had been many yeares filld up, and afterwards opened, and clenised againe for use: and the Liquor was found to be very fresh, and good, notwithstanding it had lyeen there many yeares: whereby it is manifest, that this way of keeping Liquors, will preserve it good a long time.



The IX. CENTURY.

WE have partly touched before, the meanes of producing fruits Experiment^d without Cores, or stones: And this we adde further, that 854. the Cause must be abundance of moisture, for that the Core, and stone, are made of a dry sap, And we see that it is possible to make a Tree put forth only in Blossome without fruit, as in Cherries with double flowers: much more in fruit, without stone or Cores.

This hath beene spoken to sufficiently before, See Experiment Observation.

514. It is neither the *taking out* of the *Pish*, as is there prescribed; nor the *abundance of moisture*, as here, that will work this effect: some Trees have a greater deale too much moisture, and yet the fruits of such have nevertheless *cores*, or *stones*.

As for the *Cherry-tree* that puts forth *Blossoms without Fruits*: that is not made to do so by any mans *Art*, or *Skill*: but it is *naturall*: I know the kind well, it is as naturall for it to beare *double blossoms*, without *Fruit*, as for any other Tree to beare such, or such a kind of fruit.

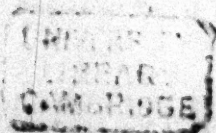
Experiment. Trees set upon the back of Chimneys, do ripen fruits sooner: Vines that have been drawn in at the window of a Kitchen, have sent forth Grapes ripe a month (at least) before others.

Observation. This is certaine (as the Author saies) such a kind of *heate*, as is upon the back of Chimneys, where fire is continually, or most commonly kept, will much hasten the ripening of fruits. I have seene a thin Brick wall where fire hath been kept on the one side; and Fruit-trees have been planted on the other side: which have brought forth ripe fruits very early: much sooner then the same kinds without such artificinall *heate*.

But (as I remember) such trees dye, soone after bearing, they last but one yeare: being so much forced with *heate*, it destroyes nature.

And Branches of Vines being drawn in at the window of a Kitchen, or room where fire is kept: the fruits will be ripe sooner then those without dores: but let it not be too neere the fire, lest it wither, or over much dry the branch.

THE END.



I desire the Reader to amend these faults escaped in Printing.

P Ag. 2. line 10. for *forming*, read *forcing* of nature. p. 30. l. 6. put a full poynt after the word *Flower*. p. 30. l. 7. for *is*, read *with*. p. 32. l. the last, for *variety*, read *vanity*. p. 40. l. the first, for *winds*, read *wines*.



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the ensuing Experiments, and Observations.

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